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Section III
Acrylics

CARGILL, INC.: Acrylics:

A. Solid Thermoplastic Acrylic Resins:

16 0053:
DIANAL BR-53:
Viscosity in Toluol: L-P @ 40% nvm
Acid Value (Max.): 8.0
Tg (C): 56
MW (ave): 64,000
Weight per Gallon: 8.75
Styrene modified, forms a hard, tough, durable coating for concrete and masonry.

16 0055:
DIANAL BR-55:
Viscosity in Toluol: V-Z @ 40% nvm
Acid Value (Max.): 7.5
Tg (C): 56
MW (ave): 125,000
Weight per Gallon: 8.75
Styrene modified forms a hard, tough, durable coating for concrete and masonry.

16 0071:
DIANAL BR-71:
Viscosity in Toluol: W-Z @ 40% nvm
Acid Value (Max.): 1.0
Tg (C): 55
MW (ave): 70,000
Weight per Gallon: 9.60
Offers excellent hardness, flexibility and adhesion to metal.

16 0073:
DIANAL BR-73:
Viscosity in Toluol: Q-U @ 30% nvm
Acid Value (Max.): 3.0
Tg (C): 100
MW (ave): 85,000
Weight per Gallon: 9.90
Excellent hardness, adhesion and flexibility for inks and pvc leather coatings.

DIANAL is a registered trademark of Mitsubishi Rayon Co., Ltd.

CARGILL, INC.: Acrylics(Continued):

Solid Thermoplastic Acrylic Resins(Continued):

16 0079:
DIANAL BR-79:
Viscosity in Toluol: S-W @ 40% nvm
Acid Value (Max.): 4.0
Tg (C): 35
MW (ave): 70,000
Weight per Gallon: 9.75
Improved flexibility over 16 0073 for inks and adhesives for food packaging.

16 0085:
DIANAL BR-85:
Viscosity in Toluol: V-Y @ 20% nvm
Acid Value (Max.): 0
Tg (C): 105
MW (ave): 280,000
Weight per Gallon: 9.90
Tough, and excellent in durability and weathering for inks and calendering varnishes.

16 0087:
DIANAL BR-87:
Viscosity in Toluol: V-Y @ 40% nvm
Acid Value (Max.): 12.0
Tg (C): 105
MW (ave): 25,000
Weight per Gallon: 9.90
Tough, and excellent durability and weathering for use as a pigment dispersion vehicle.

16 0090:
DIANAL BR-090:
Viscosity in Toluol: V-Y @ 30% nvm
Acid Value (Max.): 1.0
Tg (C): 65
MW (ave): 230,000
Weight per Gallon: 9.40
Hard, relatively flexible acrylic, high in alcohol tolerance for adhesives.

CARGILL, INC.: Acrylics(Continued):

Solid Thermoplastic Acrylic Resins(Continued):

16 0093:
DIANAL BR-93:
Viscosity in Toluol: S-W @ 40% nvm
Acid Value (Max.): 5.0
Tg (C): 50
MW (ave): 80,000
Weight per Gallon: 9.50
Offers excellent adhesion and flexibility for adhesives and polycarbonate coatings.

16 0101:
DIANAL BR-101:
Viscosity in Toluol: T-W @ 40% nvm
Acid Value (Max.): 0
Tg (C): 50
MW (ave): 160,000
Weight per Gallon: 8.75
For inks, adhesives and temporary binders for ceramics. Relatively hard. Soluble in aliphatic and alcohol solvents.

16 0106:
DIANAL BR-106:
Viscosity in Toluol: L-O @ 40% nvm
Acid Value (Max.): 3.5
Tg (C): 50
MW (ave): 60,000
Weight per Gallon: 9.10
Offers excellent compatability with other resins. Good adhesion, good pigment dispersion vehicle.

16 0111:
DIANAL BR-111:
Viscosity in Toluol: I-K @ 40% nvm
Acid Value (Max.): 1.0
Tg (C): 20
MW (ave): 87,000
Weight per Gallon: 8.80
Soft, flexible resin for inks and adhesives.

CARGILL, INC.: Acrylics(Continued):

Solid Thermoplastic Acrylic Resins(Continued):

16 0112:
DIANAL BR-112:
Viscosity in Toluol: T-W @ 40% nvm
Acid Value (Max.): 0
Tg (C): 20
MW (ave): 180,000
Weight per Gallon: 8.80
Soft, flexible resin for inks, adhesives and temporary binders for ceramics.

16 0113:
DIANAL BR-113:
Viscosity in Toluol: J-N @ 40% nvm
Acid Value (Max.): 4.0
Tg (C): 75
MW (ave): 30,000
Weight per Gallon: 9.60
16 0106 type with improved hardness for coatings on plastics and wood.

16 0115:
DIANAL BR-115:
Viscosity in Toluol: D-G @ 40% nvm
Acid Value (Max.): 0
Tg (C): 50
MW (ave): 55,000
Weight per Gallon: 8.80
Offers good compatability with long and medium oil alkyds.

16 0116:
DIANAL BR-116:
Viscosity in Toluol: L-O @ 40% nvm
Acid Value (Max.): 8.5
Tg (C): 50
MW (ave): 45,000
Weight per Gallon: 9.25
16 0106 type with improved pigment dispersability for paints, inks and adhesives.

CARGILL, INC.: Acrylics(Continued):

Solid Thermoplastic Acrylic Resins(Continued):

16 0117:
DIANAL BR-117:
Viscosity in Toluol: T-W @ 40% nvm
Acid Value (Max.): 0
Tg (C): 35
MW (ave): 140,000
Weight per Gallon: 9.10
Moderately hard with good flexibility for adhesives and inks.

16 0118:
DIANAL BR-118:
Viscosity In Toluol: U-Y @ 40% nvm
Acid Value (Max.): 0
Tg (C): 35
MW (ave): 190,000
Weight per Gallon: 8.80
Properties between 16 0101 and 16 0112 for inks, adhesives and temporary binders for ceramics.

16 0120:
DIANAL BR-120:
Viscosity in Toluol: E-H @ 40% nvm
Acid Value (Max.): 1.0
Tg (C): 55
MW (ave): 47,000
Weight per Gallon: 8.80
Harder, more durable than 16 0115 for modification of long and medium oil alkyds.

16 0121:
DIANAL BR-121:
Viscosity in Toluol: W-Z @ 40% nvm
Acid Value (Max.): 4.0
Tg (C): 50
MW (ave): 87,000
Weight per Gallon: 9.20
Excellent hardness, adhesion and weatherability on untreated metal.

CARGILL, INC.: Acrylics(Continued):

B. Thermoplastic Acrylic Lacquer Resins:

16 7073:
% N.V. (By Wt.): 40
Volatile: MEK
Viscosity (Gardner @ 77F): U-X
Max. Acid Value (Solids): 3.0
Tg (C): 100
Weight per Gallon: 7.90
Base Resin: 16 0073

16 8073:
% N.V. (By Wt.): 30
Volatile: P.M. Acetate
Viscosity (Gardner @ 77F): V-Y
Max. Acid Value (Solids): 3.0
Tg (C): 100
Weight per Gallon: 8.50
Base Resin: 16 0073

16 1079:
% N.V. (By Wt.): 51
Volatile: Toluol
Viscosity (Gardner @ 77F): Z4-Z7
Max. Acid Value (Solids): 4.0
Tg (C): 35
Weight per Gallon: 8.50
Base Resin: 16 0079

16 1093:
% N.V. (By Wt.): 50
Volatile: Toluol
Viscosity (Gardner @ 77F): Z2-Z5
Max. Acid Value (Solids): 5.0
Tg (C): 50
Weight per Gallon: 8.30
Base Resin: 16 0093

16 1106:
% N.V. (By Wt.): 51
Volatile: Toluol
Viscosity (Gardner @ 77F): Y-Z3
Max. Acid Value (Solids): 3.5
Tg (C): 50
Weight per Gallon: 8.25
Base Resin: 16 0106

CARGILL, INC.: Acrylics(Continued):

Thermoplastic Acrylic Lacquer Resins(Continued):

16 2106:
% N.V. (By Wt.): 50
Volatile: Toluol
Viscosity (Gardner @ 77F): X-Z3
Max. Acid Value (Solids): 3.5
Tg (C): 50
Weight per Gallon: 8.20
Base Resin: 16 0106

16 3106:
% N.V. (By Wt.): 51
Volatile: Xylol
Viscosity (Gardner @ 77F): Y-Z3
Max. Acid Value (Solids): 3.5
Tg (C): 50
Weight per Gallon: 8.25
Base Resin: 16 0106

16 4106:
% N.V. (By Wt.): 50
Volatile: Xylol
Viscosity (Gardner @ 77F): X-Z3
Max. Acid Value (Solids): 3.5
Tg (C): 50
Weight per Gallon: 8.20
Base Resin: 16 0106

16 9111:
% N.V. (By Wt.): 40
Volatile: Mineral Thinner Solvent
Viscosity (Gardner @ 77F): X-Z1
Max. Acid Value (Solids): 1.0
Tg (C): 20
Weight per Gallon: 7.40
Base Resin: 16 0111

16 5115:
% N.V. (By Wt.): 45
Volatile: VM&P Naphtha
Viscosity (Gardner @ 77F): V-Y
Max. Acid Value (Solids): 0
Tg (C): 50
Weight per Gallon: 7.30
Base Resin: 16 0115

CARGILL, INC.: Acrylics(Continued):

Thermoplastic Acrylic Lacquer Resins(Continued):

16 6115:
% N.V. (By Wt.): 51
Volatile: VM&P Naphtha
Viscosity (Gardner @ 77F): Z2-Z5
Max. Acid Value (Solids): 0
Tg (C): 50
Weight per Gallon: 7.50
Base Resin: 16 0115

16 8115:
% N.V. (By Wt.): 45
Volatile: Mineral Spirits
Viscosity (Gardner @ 77F): V-Y
Max. Acid Value (Solids): 0
Tg (C): 50
Weight per Gallon: 7.40
Base Resin: 16 0115

16 1121:
% N.V. (By Wt.): 45
Volatile: Toluol
Viscosity (Gardner @ 77F): Z3-Z6
Max. Acid Value (Solids): 4.0
Tg (C): 50
Weight per Gallon: 8.10
Base Resin: 16 0121

CONTINENTAL POLYMERS, INC.: ACRYCAL MP Modified Acrylic Resins:

CP-924:
Injection Molding Grade Pellets. Good impact strength. Up to four times the impact strength of General Purpose Grades of Acrylic. Excellent light transmission. Excellent Price/Performance Ratio.
Melt Flow Rate: 7.0

CP-927:
Injection Molding Grade Pellets. Better impact strength. Offers up to seven times the impact resistance of General Purpose Grades of Acrylic. Excellent surface gloss, optical clarity and practical toughness.
Melt Flow Rate: 5.0

CP-1000-1:
Injection Molding Grade Pellets. Best impact strength. Offers up to ten times the impact strength of General Purpose Grades of Acrylic with excellent environmental stability and transparency.
Melt Flow Rate: 3.0

CP-1000-E:
Extrusion Grade Pellets. Up to twelve times the impact strength of General Purpose Grades of Acrylic. Excellent blend stock material for those applications requiring non-standard impact material.
Melt Flow Rate: 1.0

Processing Advantages:
Complementing their excellent property profile are ACRYCAL Impact Modified Resin's characteristics for easy, economical injection molding.
- Wide processing temperature range.
- Low and predictable mold shrinkage for greater part-to-part consistency.
- Quick set-up release for fast, economical cycle times.
- Outstanding mechanical strength.

CONTINENTAL POLYMERS INC.: ACRYCAL MP Modified Acrylic Resins (Continued):

Physical Properties:

CP-924:
- Refractive Index: ND: 1.49
- Specific Gravity: 1.17
- Tensile Strength: psi: 8400
- Tensile Modulus: psi: 360000
- Elongation: %: 4.5
- Flexural Strength: psi: 12500
- Flexural Modulus: psi: 370000
- Compressive Strength: psi: 12000
- Impact Strength:
  - Notched Izod: Ft. Lbs/In: 0.8
  - Gardner Impact: Inch. Lbs: 18
- Light Transmittance: %: 92
- Melt Flow Rate, Cond. 1: 7.0
- Rockwell Hardness: M Scale: 68
- Vicat Softening Pt.: F: 233
- Heat Deflection Temp.
  - 1/4 Thick (264 psi): F: 182
- Shrinkage - From: 48 hrs. 2-7
  Mold Dimension: mils/in.
- Dielectric Strength: V/mil: 380
- Dielectric Constant:
  - 100 Hertz: 3.36
  - 1K Hertz: 3.14
  - 1M Hertz: 2.44
- Power Factor:
  - 100 Hertz: 0.050
  - 1K Hertz: 0.041
  - 1M Hertz: 0.030
- Arc Resistance: No Track
- % Haze: %: <1
- UL Rating: 1/8": 94 HB

Injection Molding Processing Parameters:

- Mold Temperature F: 110-190
- Barrel Temperature F:
  - Rear: 350-450
  - Middle: 380-480
  - Front: 400-500
  - Nozzle: 380-480
- Melt Temperature F: 420-480
- Injection Pressure (psi): 10,000-20,000
- Back Pressure (psi): 50-150
- Screw Speed (rpm): 50-100
- Clamp Tonnage per sq. in.: 10 tons/sq.in.
- Cycle Time (at .125" thick):
  - Injection Forward: 7-10 sec.
  - Mold Closed: 20-25 sec.
- Drying Conditions: 2-4 hrs. @ 180F

CONTINENTAL POLYMERS INC.: ACRYCAL MP Modified Acrylic Resins (Continued):

CP-927:

- Refractive Index: ND: 1.49
- Specific Gravity: 1.16
- Tensile Strength: psi: 7200
- Tensile Modulus: psi: 300000
- Elongation: %: 6.0
- Flexural Strength: psi: 11000
- Flexural Modulus: psi: 300000
- Compressive Strength: psi: 10500
- Impact Strength:
  - Notched Izod: Ft. Lbs./In: 1.0
  - Gardner Impact: Inch Lbs.: 36
- Light Transmittance: %: 92
- Melt Flow Rate, Cond. I: 5.0
- Rockwell Hardness: M Scale: 55
- Vicat Softening Pt.: F: 233
- Heat Deflection Temp.:
  - 1/4 Thick (264 psi): 174
- Shrinkage - From: 48 hrs.: 2-7
  - Mold Dimension: mils/in.
- Dielectric Strength: V/mil: 380
- Dielectric Constant:
  - 100 Hertz: 3.39
  - 1K Hertz: 3.16
  - 1M Hertz: 2.52
- Power Factor:
  - 100 Hertz: 0.049
  - 1K Hertz: 0.040
  - 1M Hertz: 0.032
- Arc Resistance: No Track
- % Haze: <1
- UL Rating: 1/8": 94 HB

Injection Molding Processing Parameters:

- Mold Temperature F: 100-180
- Barrel Temperature F:
  - Rear: 360-460
  - Middle: 390-490
  - Front: 410-510
  - Nozzle: 390-490
- Melt Temperature F: 430-490
- Injection Pressure (psi): 10,000-20,000
- Back Pressure (psi): 50-150
- Screw Speed (rpm): 50-100
- Clamp Tonnage per sq. in.: 10 tons/sq.in.
- Cycle Time (at .125" thick):
  - Injection Forward: 7-10 sec.
  - Mold Closed: 20-25 sec.
- Drying Conditions: 2-4 hrs. @ 175F

CONTINENTAL POLYMERS INC.: ACRYCAL MP Modified Acrylic Resins (Continued):

CP-1000-1:

Physical Properties:
- Refractive Index: ND: 1.50
- Specific Gravity: 1.15
- Tensile Strength: psi: 6000
- Tensile Modulus: psi: 250000
- Elongation: %: 14.0
- Flexural Strength: psi: 9000
- Flexural Modulus: psi: 260000
- Compressive Strength: psi: 8300
- Impact Strength:
  - Notched Izod: Ft. Lbs/In: 1.2
  - Gardner Impact: Inch. Lbs: 48
- Light Transmittance: %: 91
- Melt Flow Rate, Cond. I: 3.0
- Rockwell Hardness: M Scale: 35
- Vicat Softening Pt.: F: 227
- Heat Deflection Temp.:
  - 1/4 Thick (264 psi): F: 172
- Shrinkage - From: 48 hrs.: 2-7
  Mold Dimension: mils/in.
- Dielectric Strength: V/mil: 380
- Dielectric Constant:
  - 100 Hertz: 3.48
  - 1K Hertz: 3.26
  - 1M Hertz: 2.57
- Power Factor:
  - 100 Hertz: 0.045
  - 1K Hertz: 0.038
  - 1M Hertz: 0.037
- Arc Resistance: No Track
- % Haze: <2
- UL Rating: 1/8": 94 HB

Injection Molding Processing Parameters:
- Mold Temperature F: 100-170
- Barrel Temperature F:
  - Rear: 350-450
  - Middle: 380-480
  - Front: 400-500
  - Nozzle: 380-480
- Melt Temperature F: 420-490
- Injection Pressure (psi): 10,000-20,000
- Back Pressure (psi): 50-150
- Screw Speed (rpm): 50-100
- Clamp Tonnage per sq. in.: 10 tons/sq.in.
- Cycle Time (at .125" thick):
  - Injection Forward: 7-10 sec.
  - Mold Closed: 20-25 sec.
- Drying Conditions: 2-4 hrs. @ 165F

CONTINENTAL POLYMERS INC.: ACRYCAL MP Modified Acrylic Resins (Continued):

CP-1000-E:

Physical Properties:
- Refractive Index: ND: 1.50
- Specific Gravity: 1.15
- Tensile Strength: psi: 5900
- Tensile Modulus: psi: 240000
- Elongation: %: 18.0
- Flexural Strength: psi: 8900
- Flexural Modulus: psi: 260000
- Compressive Strength: psi: 8100
- Impact Strength:
  - Notched Izod: Ft. Lbs/In: 1.2
  - Gardner Impact: Inch Lbs: 56
- Light Transmittance: %: 91
- Melt Flow Rate, Cond. I: 1.0
- Rockwell Hardness: M Scale: 38
- Vicat Softening Pt.: F: 227
- Heat Deflection Temp.:
  - 1/4 Thick (264 psi): 176
- Shrinkage - From: 48 hrs.: 2-7
  Mold Dimension: mils/in.
- Dielectric Strength: V/mil: 380
- Dielectric Constant:
  - 100 Hertz: 3.46
  - 1K Hertz: 3.24
  - 1M Hertz: 2.58
- Power Factor:
  - 100 Hertz: 0.044
  - 1K Hertz: 0.037
  - 1M Hertz: 0.037
- Arc Resistance: No Track
- % Haze: <2
- UL Rating: 1/8": 94 HB

CONTINENTAL POLYMERS INC.: Acrylic Plastic Pellets for Injection Molding and Extrusion:

CP-51:
Injection Molding and Extrusion Grade Pellets. Medium heat resistance, easiest flow.
Melt Flow Rate: 18.5

CP-61:
Injection Molding and Extrusion Grade Pellets. Medium heat resistance, medium flow.
Melt Flow Rate: 10.0

CP-80:
Extrusion Grade Pellets Only. Unlubricated version of CP-81. Highest molecular weight, maximum heat resistance.
Melt Flow Rate: 2.8

CP-81:
Extrusion Grade Pellets. Highest molecular weight, maximum heat resistance. Specifically designed for extrusion applications.
Melt Flow Rate: 2.9

CP-82:
Injection Molding Grade Pellets. Highest molecular weight, maximum heat resistance. Specifically designed for molding applications requiring superior mold release properties.
Melt Flow Rate: 3.2

The colorless ultraviolet absorbing acrylic products listed above are also available in ultraviolet transmitting formulations. In addition, a wide range of standard and custom colors, color concentrates, and special formulations including impact modifications are available upon request.

CONTINENTAL POLYMERS INC.: Acrylic Plastic Pellets for Injection Molding and Extrusion(Continued):

Average Physical Properties of Acrylic Plastic Pellets - U.S. Units:

CP-51:

Refractive Index: nD: 1.49
Specific Gravity: 1.18
Tensile Strength: psi: 9,600
Tensile Modulus: psi: 410,000
Flexural Strength: psi: 15,000
Compressive Strength: psi: 14,500
Impact Strength: Izod ft-lb/in.: 0.4
Rockwell Hardness: M Scale: 89
Light Transmission: %: 92
Melt Flow Rate: g/10 min. Cond. I: 18.5
Flow Temperature: F: 280
Deflection Temperature: F: 182
Shrinkage--From Mold Dimension: mils/in. 48 hrs.: 2-6
Dielectric Strength: V/mil: 500
Dielectric Constant: 60Hz: 3.9
Power Factor: 60Hz: 0.05
Loss Factor: 60Hz: 0.17
Arc Resistance: seconds: No Track
Flammability: in./min.: 0.8
Limiting O2 Index: %: 16.05
Max. Smoke Density: %: 4.29
Burn Rate: UL-94 Rating: 94 HB
Water Absorption: % wt. gain: 0.3

CP-61:

Refractive Index: nD: 1.49
Specific Gravity: 1.18
Tensile Strength: psi: 10,000
Tensile Modulus: psi: 430,000
Flexural Strength: psi: 15,500
Compressive Strength: psi: 16,000
Impact Strength: Izod ft-lb/in.: 0.4
Rockwell Hardness: M Scale: 92
Light Transmission: %: 92
Melt Flow Rate: g/10 min. Cond. I: 10.0
Flow Temperature: F: 305
Deflection Temperature: F: 190
Shrinkage--From Mold Dimension: mils/in. 48 hrs.: 2-6
Dielectric Strength: V/mil: 500
Dielectric Constant: 60Hz: 3.6
Power Factor: 60Hz: 0.05
Loss Factor: 60Hz: 0.18
Arc Resistance: seconds: No Track
Flammability: in./min.: 0.8
Limiting O2 Index: %: 16.06
Max. Smoke Density: %: 3.44
Burn Rate: UL-94 Rating: 94 HB
Water Absorption: % wt. gain: 0.3

CONTINENTAL POLYMERS INC.: Acrylic Plastic Pellets for Injection Molding and Extrusion(Continued):

CP-80:
Refractive Index: nD: 1.49
Specific Gravity: 1.19
Tensile Strength: psi: 10,500
Tensile Modulus: psi: 430,000
Flexural Strength: psi: 16,000
Compressive Strength: psi: 17,000
Impact Strength: Izod ft-lb/in.: 0.4
Rockwell Hardness: M Scale: 95
Light Transmission: %: 92
Melt Flow Rate: g/10 min. Cond. I: 2.8
Flow Temperature: F: 319
Deflection Temperature: F: 198
Shrinkage--From Mold Dimension: mils/in. 48 hrs.: 2-6
Dielectric Strength: V/mil: 500
Dielectric Constant: 60Hz: 3.5
Power Factor: 60Hz: 0.05
Loss Factor: 60Hz: 0.19
Arc Resistance: seconds: No Track
Flammability: in./min.: 0.9
Limiting O2 Index: %: 15.73
Max. Smoke Density: %: 5.82
Burn Rate: UL-94 Rating: 94 HB
Water Absorption: % wt. gain: 0.3

CP-81:
Refractive Index: nD: 1.49
Specific Gravity: 1.19
Tensile Strength: psi: 10,500
Tensile Modulus: psi: 430,000
Flexural Strength: psi: 16,000
Compressive Strength: psi: 17,000
Impact Strength: Izod ft-lb/in.: 0.4
Rockwell Hardness: M Scale: 95
Light Transmission: %: 92
Melt Flow Rate: g/10 min. Cond. I: 2.9
Flow Temperature: F: 319
Deflection Temperature: F: 198
Shrinkage--From Mold Dimension: mils/in. 48 hrs.: 2-6
Dielectric Strength: V/mil: 500
Dielectric Constant: 60Hz: 3.5
Power Factor: 60Hz: 0.05
Loss Factor: 60Hz: 0.19
Arc Resistance: seconds: No Track
Flammability: in./min.: 0.9
Limiting O2 Index: %: 15.73
Max. Smoke Density: %: 5.82
Burn Rate: UL-94 Rating: 94 HB
Water Absorption: % wt. gain: 0.3

CONTINENTAL POLYMERS INC.: Acrylic Plastic Pellets for Injection Molding and Extrusion(Continued):

CP-82:

Refractive Index: nD: 1.49
Specific Gravity: 1.19
Tensile Strength: psi: 10,500
Tensile Modulus: psi: 430,000
Flexural Strength: psi: 16,000
Compressive Strength: psi: 17,000
Impact Strength: Izod ft-lb/in.: 0.4
Rockwell Hardness: M Scale: 95
Light Transmission: %: 92
Melt Flow Rate: g/10 min. Cond. I: 3.2
Flow Temperature: F: 319
Deflection Temperature: F: 198
Shrinkage--From Mold Dimension: mils/in. 48 hrs.: 2-6
Dielectric Strength: 500 V/mil
Dielectric Constant: 60Hz: 3.5
Power Factor: 60Hz: 0.05
Loss Factor: 60Hz: 0.19
Arc Resistance: seconds: No Track
Flammability: in./min.: 1.0
Limiting O2 Index: %: 15.73
Max. Smoke Density: %: 5.82
Burn Rate: UL-94 Rating: 94 HB
Water Absorption: % wt. gain: 0.3

CYRO INDUSTRIES: ACRYLITE Acrylic Molding and Extrusion Compounds:

ACRYLITE acrylic molding and extrusion compounds offer an outstanding combination of strength, optical clarity, brilliance, light stability, and outdoor durability.

Four grades of ACRYLITE compounds are available - H-15, H-12, M-30 and L-40. Compounds designated "H" meet ASTM specification D-788, Grade 8, M-30 meets ASTM Grade 6 and L-40 meets ASTM Grade 5.

ACRYLITE H-12 offers improved flow properties for a Grade 8 material. ACRYLITE H-15 provides increased toughness and retains maximum service temperatures. These compounds are appropriate for injection molding and extrusion applications.

ACRYLITE M-30 and L-40 are improved flow grades offering easier molding and extrusion with minimal loss in heat-resistance.

All grades of ACRYLITE compounds are available from stock in crystal and a wide range of transparent, translucent, and opaque colors. Specialty colors can be produced.

Parts produced from ACRYLITE compounds have good dimensional stability, surface hardness and machinability; they can also be readily decorated by conventional methods.

ACRYLITE compounds are suitable for a number of applications including automotive lighting lenses, glazing, instrument covers, decorative medallions, optical equipment, lighting fixtures and diffusers, and signs.

CYRO INDUSTRIES: ACRYLITE Acrylic Molding and Extrusion Compounds(Continued):

Grade 8:
H-15:
Optical Properties:
Refractive Index: 1.49
% Light Transmission: 92
Color: Water White
Mechanical Properties:
Tensile Strength, psi: 9,800
Tensile Modulus, x 10 4 psi: 0.47
Flexural Strength, psi: 17,000
Compressive Strength, psi: 17,000
Izod Impact, Notched, fppl: 0.36
Rockwell Hardness, M, scale: 95
Thermal Properties:
Vicat, C: 105
Deflection Temp. Under Load, C(F):
264 psi, Unannealed: 89(193)
264 psi, Annealed: 96(203)
Coefficient of Linear Expansion: in./in./F, 32-212F: 4.0x10 -5
Average Melt Index, Condition I: 2.2
Electrical Properties:
Dielectric Strength volts/mils. 1/8" Thickness: 500
Dielectric Constant:
10^ Hz: 3.7
10 6 Hz: 2.8
Power Factor:
10^ Hz: 0.06
10 6 Hz: 0.03
Arc Resistance: No Tracking
Miscellaneous:
Specific Gravity: 1.19
Water Absorption, % max.: 0.3
Mold Shrinkage, in./in.: 0.004-0.007
Odor: None
Taste: None
Chemical Resistance:
Weight Change, After 7 Days Immersion at 23C:
30% Sulfuric Acid: 0.5
3% Sulfuric Acid: 0.7
10% Nitric Acid: 0.7
5% Acetic Acid: 0.7
10% Sodium Chloride: 0.6
10% Sodium Hydroxide: 0.6
10% Ammonium Hydroxide: 0.7
Detergent Solution: 0.7
50% Ethyl Alcohol: 2.3

CYRO INDUSTRIES: ACRYLITE Acrylic Molding and Extrusion Compounds (Continued):

Grade 8:
H-12:
Optical Properties:
Refractive Index: 1.49
% Light Transmission: 92
Color: Water White
Mechanical Properties:
Tensile Strength, psi: 9,500
Tensile Modulus, x 10 4 psi: 0.47
Flexural Strength, psi: 17,000
Compressive Strength, psi: 17,000
Izod Impact, Notched, fppl: 0.36
Rockwell Hardness, M. scale: 94
Thermal Properties:
Vicat, C: 105
Deflection Temp. Under Load, C(F):
264 psi, Unannealed: 89(193)
264 psi, Annealed: 95(201)
Coefficient of Linear Expansion: in./in/F, 32-212F: 4.0x10 -5
Average Melt Index, Condition I: 7.0
Electrical Properties:
Dielectric Strength volts/mil. 1/8" Thickness: 500
Dielectric Constant:
10^ Hz: 3.7
10 6 Hz: 2.8
Power Factor:
10^ Hz: 0.06
10 6 Hz: 0.03
Arc Resistance: No Tracking
Miscellaneous:
Specific Gravity: 1.19
Water Absorption, % max.: 0.3
Mold Shrinkage, in./in.: 0.004-0.006
Odor: None
Taste: None
Chemical Resistance:
Weight Change, After 7 Days Immersion at 23C:
30% Sulfuric Acid: 0.5
3% Sulfuric Acid: 0.7
10% Nitric Acid: 0.7
5% Acetic Acid: 0.7
10% Sodium Chloride: 0.6
10% Sodium Hydroxide: 0.6
10% Ammonium Hydroxide: 0.7
Detergent Solution: 0.7
50% Ethyl Alcohol: 2.5

CYRO INDUSTRIES: ACRYLITE Acrylic Molding and Extrusion Compounds (Continued):

Grade 6:
M-30:
Optical Properties:
Refractive Index: 1.49
% Light Transmission: 92
Color: Water White
Mechanical Properties:
Tensile Strength, psi: 9,200
Tensile Modulus, x 10 4 psi: 0.47
Flexural Strength, psi: 15,500
Compressive Strength, psi: 15,500
Izod Impact, Notched, fppl: 0.36
Rockwell Hardness, M. scale: 89
Thermal Properties:
Vicat, C: 90
Deflection Temp. Under Load, C(F):
264 psi, Unannealed: 81(178)
264 psi, Annealed: 82(180)
Coefficient of Linear Expansion In.In./F, 32-212F: 4.0x10 -5
Average Melt Index, Condition I: 24.0
Electrical Properties:
Dielectric Strength volts/mils. 1/8" Thickness: 500
Dielectric Constant:
10^ Hz: 3.7
10 6 Hz: 2.8
Power Factor:
10^ Hz: 0.06
10 6 Hz: 0.03
Arc Resistance: No Tracking
Miscellaneous:
Specific Gravity: 1.19
Water Absorption, % max.: 0.3
Mold Shrinkage, in./in.: 0.003-0.006
Odor: None
Taste: None
Chemical Resistance:
Weight Change, After 7 Days Immersion at 23C:
30% Sulfuric Acid: 0.4
3% Sulfuric Acid: 0.7
10% Nitric Acid: 0.7
5% Acetic Acid: 0.7
10% Sodium Chloride: 0.6
10% Sodium Hydroxide: 0.6
10% Ammonium Hydroxide: 0.7
Detergent Solution: 0.7
50% Ethyl Alcohol: 3.4

CYRO INDUSTRIES: ACRYLITE Acrylic Molding and Extrusion Compounds (Continued):

Grade 5:
L-40:
Optical Properties:
Refractive Index: 1.49
% Light Transmission: 92
Color: Water White
Mechanical Properties:
Tensile Strength, psi: 8,800
Tensile Modulus, x 10 4 psi: 0.47
Flexural Strength, psi: 14,200
Compressive Strength, psi: 13,700
Izod Impact, Notched, fppl: 0.36
Rockwell Hardness, M. scale: 84
Thermal Properties:
Vicat, C: 82
Deflection Temp. Under Load, C(F):
264 psi, Unannealed: 72(162)
264 psi, Annealed: 74(165)
Coefficient of Linear Expansion In./In./F, 32-212F: 4.0x10 -5
Average Melt Index, Condition I: 28.0
Electrical Properties:
Dielectric Strength volts/mils. 1/8" thickness: 500
Dielectric Constant:
10^ Hz: 3.7
10 6 Hz: 2.8
Power Factor:
10^ Hz: 0.06
10 6 Hz: 0.03
Arc Resistance: No Tracking
Miscellaneous:
Specific Gravity: 1.19
Water Absorption, % max.: 0.3
Mold Shrinkage, In./In.: 0.003-0.005
Odor: None
Taste: None
Chemical Resistance:
Weight Change, After 7 Days Immersion at 23C:
30% Sulfuric Acid: 0.4
3% Sulfuric Acid: 0.7
10% Nitric Acid: 0.7
5% Acetic Acid: 0.7
10% Sodium Chloride: 0.6
10% Sodium Hydroxide: 0.6
10% Ammonium Hydroxide: 0.7
Detergent Solution: 0.7
50% Ethyl Alcohol: 3.4

CYRO INDUSTRIES: ACRYLITE Acrylic Molding & Extrusion Compounds:

Two new versions of ACRYLITE H-15 acrylic molding & extrusion compounds were formed by combining the properties of ACRYLITE H-11-002 and H-15-009. ACRYLITE H-15-011 was developed with special ultraviolet light-absorbing properties to meet the higher specifications for automotive applications. It's a tougher grade of CYRO's H-15 acrylic and offers a higher DTL. With its improved surface hardness and higher heat distortion, ACRYLITE H-15-011 is ideal for use in automotive decorative pieces, appliques, emblems and more.

CYRO's new ACRYLITE H-15-012 acrylic compounds consist of the same basic polymer without the ultraviolet light-absorbing properties. This new material is an injection-molding grade of polymer and offers higher flow characteristics than the original ACRYLITE H-15 acrylic compounds. It's ideal for use in applications requiring critical detail.

H-15-011/H-15-012:
UV Absorbing/UV Transmitting

Optical Properties:
- Refractive Index: 1.49
- % Light Transmission: 92
- Color: Water White

Mechanical Properties:
- Tensile Strength, psi: 11,000
- Tensile Modulus, x 10 6 psi: 0.5
- Flexural Strength, psi: 19,000
- Compressive Strength, psi: 17,000
- Izod Impact, Notched, fppi: 0.4
- Rockwell Hardness, M Scale: 97

Thermal Properties:
- Deflection Temp. Under Load, C:
  - 264 psi, Unannealed: 92C(198F)
  - 264 psi, Annealed: 99C(210F)
- Coefficient of Linear Expansion: in/in/F: 32-212F: 4.0x10 -5
- Average Melt Index, Condition I: 2.5

Electrical Properties:
- Dielectric Strength volts/mil. 1/8" Thickness: 500
- Dielectric Constant:
  - 10 2 Hz: 3.7
  - 10 6 Hz: 2.8
- Power Factor:
  - 10 2 Hz: 0.06
  - 10 6 Hz: 0.03
- Arc Resistance: No Tracking

Miscellaneous:
- Specific Gravity: 1.19
- Water Absorption %: 0.3
- Mold Shrinkage, in/in: 0.002-0.006
- Odor: None
- Taste: None

CYRO INDUSTRIES: ACRYLITE PLUS Acrylic Molding and Extrusion Compounds:

ACRYLITE PLUS compounds are impact-modified acrylic molding and extrusion compounds.

ACRYLITE PLUS compounds offer:

- Excellent weatherability
- Outstanding clarity
- Improved impact resistance
- Superior gloss
- Consistent processing
- Excellent blending characteristics

ACRYLITE PLUS compounds have wide acceptance in markets such as automotive, lighting, personal accessories and recreational products.

Optical Properties:
Color: Natural: Clear
% Light Transmission: 90
% Haze: 5
Physical Properties:
Izod Impact Strength, Notched:
Ft. Lbs. 23C: 1.2
0C: 0.6
Tensile Strength, psi: 7,000
Tensile Elongation, Yield: 5.5
Tensile Modulus psi: 300,000
Elongation At Break: 48
Flexural Strength, psi: 10,500
Flexural Modulus, psi: 310,000
Specific Gravity: 1.15
Rockwell Hardness - M Scale: 44
Thermal Properties:
Deflection Temp. (264 psi, C): 85
Average Melt Index, Cond. I: 1.8

CYRO INDUSTRIES: XT Polymers Molding/Extrusion Compounds: Acrylic-Based Multipolymers:

XT Polymer molding and extrusion compounds are economical, transparent, chemical resistant materials that allow great design flexibility. They're acrylic-based multipolymers with a good combination of melt strength, heat resistance and sterilizability that deliver a high level of quality. Offering superior heat distortion temperatures, good impact strength and resistance to plasticizer migration, they can be sterilized by either ethylene oxide gas or radiation methods and still retain their properties.

XT Polymers can be injection molded without special tooling requirements. In most cases, tooling designed for ABS, PVC and styrene can be readily used or adapted. They offer excellent and consistent bonding to PVC tubing and other mating plastics. Parts can be solvent bonded, sonic welded, thermal bonded, and spin welded.

They're resistant to body fluids, many chemicals, and plasticizers, and compatible with detergents and certain freon cleaners. They have a light transmittance almost equal to glass, can be pigmented or dyed and retain a glossy surface.

XT 375:
Optical Properties:
Color: Clear
Light Transmission, %: 87
Haze, %: 9
Physical Properties:
Izod Impact Strength, Notched
Ft. lbs./inch of notch (1/4 inch bar):.
73F: 2.0
32F: 1.6
-40F: 1.2
Izod Impact Strength, Unnotched: 24
Ft. lbs./inch(1/4 inch bar), 73F
Tensile Impact, Ft. lbs./in^, 73F:
Short Specimen: 41
Long Specimen: 96
Tensile Strength, psi: 7,000
Tensile Modulus, psi: 370,000
Tensile Elongation, %:
at yield: 3.6
at break: 28
Flexural Strength, psi: 11,000
Flexural Modulus, psi: 350,000
Compressive Strength, psi: 9,500
Rockwell Hardness: R114
M45
Thermal Properties:
Deflection Temperature, F 264 psi: 186
Coefficient of Thermal Expansion, in./in./F: 5.0x10 -5
Deformation Under Load, %:
24 hr./122F/2000 psi: 0.30

CYRO INDUSTRIES: XT Polymers Molding/Extrusion Compounds: Acrylic-Based Multipolymers(Continued):

XT 250:

Optical Properties:
- Color: Clear
- Light Transmission, %: 87
- Haze, %: 8

Physical Properties:
- Izod Impact Strength Nothced:
- Ft. lbs./inch of notch (1/4 inch bar).
  - 73F: 1.0
  - 32F: 0.9
  - -40F: 0.9
- Izod Impact Strength, Unnotched: 16
  - Ft. lbs./inch (1/4 inch bar), 73F
- Tensile Impact, Ft. lbs./in^2., 73F
  - Short Specimen: 40
  - Long Specimen: 90
- Tensile Strength, psi: 8,000
- Tensile Modulus, psi: 430,000
- Tensile Elongation, %:
  - at yield: 3.6
  - at break: 15
- Flexural Strength, psi: 13,000
- Flexural Modulus, psi: 400,000
- Compressive Strength, psi: 11,500
- Rockwell Hardness: R119
  M68

Thermal Properties:
- Deflection Temperature, F 264 psi: 188
- Coefficient of Thermal Expansion, in./in./F: 4.4x10 -5
- Deformation Under Load, %:
  - 24 hr./122F/2000 psi: 0.26

Time Dependent Properties:
- Long Term Tensile Strength, psi: 3400
- Tensile Creep, % Elongation (3300 psi stress)
  - 24 hours: 0.9
  - 168 hours: 1.0
  - 504 hours: 1.1

Miscellaneous Properties:
- Specific Gravity: 1.12
- Armstrong Abrasion Resistance, cm 3: 0.3
- Mold Shrinkage, in./in.: .004-0.008
- Flexural Fatigue Limit (10 7 Cycles at 1800 Cycles/Min.): 1500

Chemical Properties:
- Water Absorption, %: 0.3
- Weight Change, %:
  - One Week Immersion at 73F.
  - Hexane: 0.1
  - Isopropanol: 0.1

Electrical Properties:
- Dielectric Constant at:
  - 100 cps: 3.44
  - 1,000 cps: 3.28

DOCK RESINS CORP: Acrylic Resins:

DORESCO AC2-50:
DORESCO AC2-69:

DORESCO AC2-50 is a thermoplastic acrylic copolymer solution supplied at 40% solids in toluol. It is soluble in aromatic, ketone, chlorinated hydrocarbon, ester and ether-ester solvents. It is insoluble in alcohols and aliphatic solvents.

DORESCO AC2-50 provides an excellent blend of hardness, flexibility and adhesion to various substrates, superior to those of most other solution acrylics. Its adhesion to metal allows formulating for appliance finishing and automobile refinishing. It is commonly used as a grinding vehicle for automotive refinishing enamels.

DORESCO AC2-50 is a preferred vehicle for premium cement coatings when superior hardness and durability are required. It is an excellent vehicle for dispersing silicas such as Aerosils because it minimizes settling and maximizes transparency.

DORESCO AC2-50 is compatible with solution vinyls as well as most monomeric and some polymeric plasticizers. It is not compatible with alkyds, ureas or melamines.

DORESCO AC2-69 is fundamentally similar to DORESCO AC2-50 but it has been especially adhesion promoted to adhere to fiberglass polyester laminates.

Physical Constants:

DORESCO AC2-50:
- Solids: 40%
- Solvents: Toluol
- Viscosity: 1100-2000 cps
- Color (Gardner): 1 Maximum
- Lbs./Gal.: 8.2+-0.1

DORESCO AC2-69:
- Solids: 40%
- Solvents: Toluol
- Viscosity: W-Z
- Color (Gardner): 1 Maximum
- Lbs./Gal.: 8.2+-0.1

DORESCO AC4-64:

DORESCO AC4-64 is a thermoplastic acrylic resin solution of intermediate hardness especially designed to provide adhesion to aluminum foil, glass, steel (both unprimed and primed) and other metal substrates. This resin possesses toughness and flexibility so that it can be used for exterior as well as interior finishes. As a coating, DORESCO AC4-64 exhibits fast solvent release, and characteristically tends to resist blocking.

Physical Constants:
- Solids: 45+-1%
- Solvents: Toluol
- Viscosity (Gardner): 4,000-8,000 cps
- Color (Gardner): 0-1
- Lbs./Gal.: 7.8+-0.1

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO AC4-74:
DORESCO AC4-79:

DORESCO AC4-74 and DORESCO AC4-79 are thermoplastic acrylic resin solutions of intermediate hardness that are specially designed to provide adhesion to alumimum foil, glass, steel (both unprimed and primed), and other metal substrates. These resins possess toughness and flexibility so that they can be used for exterior as well as interior finishes. As coatings, DORESCO AC4-74, and DORESCO AC4-79 exhibit fast solvent release, and will characteristically tend to resist blocking. Air dry applications will, on moderate aging, achieve the same end properties as baked systems.

These resins have a different adhesion-promoting monomer than either DORESCO AC4-26 or DORESCO AC4-64. Adhesion-promoted resins do exhibit improved adhesion to a wide variety of substrates; however, each adhesion promoting monomer possesses specific preference for different surfaces. As a result, each resin should be tested on the appropriate substrate under field conditions.

DORESCO AC4-79 has been found to be more compatible with a wider variety of coating systems than DORESCO AC4-74. Otherwise, the two products perform similarly.

DORESCO AC4-74 and DORESCO AC4-79 are soluble in aromatics, ketones, esters, and ether esters. They tolerate alcohols and some aliphatics.

Physical Constants:

AC4-74:
Solids: 45+-1%
Solvents: Toluol
Viscosity: 6,000-10,000 cps.
Color (Gardner): 0-1, clear
Lbs./Gal.: 8.04+-0.1

AC4-79:
Solids: 45+-1%
Solvents: Toluol
Viscosity: 6,000-10,000 cps.
Color (Gardner): 0-1, clear
Lbs./Gal.: 8.04+-0.1

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO AC13-1:

DORESCO AC13-1 is a hard, thermoplastic homopolymer acrylic resin solution. It is a basic raw material for manufacturing of automotive refinishing enamels, vinyl inks, and other applications where intercoat adhesion, exterior durability, hardness and color retention is important. This product is similar to DORESCO AC7-4, but at higher viscosity. Despite the increased viscosity, DORESCO AC13-1 sprays well.

This resin is compatible with cellulose acetate butyrate, nitrocellulose, and other cellulosic and vinyl polymers that are typically blended with acrylics.

DORESCO AC13-1 is soluble in aromatics, ketones, esters, and ester ethers. It will tolerate alcohols and some aliphatics.

Physical Constants:
- Solids: 30+-1%
- Solvents: Toluol-Butanol 90-10
- Viscosity: 235-365 cps.
- Color: Water White
- Lbs./Gal.: 7.33+-0.1

DORESCO AC22-2:

DORESCO AC22-2 is an acrylic polymer which is soluble in most organic solvents. It can be used by itself or with other film formers (polyvinyl chloride copolymers, nitrocellulose, etc.) It can be a base for clear or pigmented coatings. It may be applied on metal or plastics as a protective coating. Further, it is designed for application by spray gun, aerosol, dip or brush, depending upon formulation. Finishes may be air-dried or baked.

DORESCO AC22-2 dries by evaporation to form a durable, flexible coating with good chemical resistance. This product is softer than the L91-1 series, and is in fact one of the softer, more flexible thermoplastic acrylics.

Physical Constants:
- Solids: 51.0+-1%
- Solvent: Toluol
- Viscosity: 4000-6000 cps.
- Viscosity @ 40% N.V.: 400-700 cps.
- Color: Water White
- Lbs./Gal.: 8.27+-0.1

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO AC24-15:

DORESCO AC24-15 is a thermoplastic acrylic resin solution soluble in most common organic solvents. It is a copolymer of a hard monomer and a long chain, soft, flexible monomer, plus an appreciable amount of acid to provide polarity.

Adhesion to vinyl film, like that of DORESCO L91-1 and DORESCO L91-17 is excellent. Adhesion to metal surfaces is better than that of the L91-1 and AC92-9 series but not as good as the adhesion-promoted DORESCO AC4 series of products. In nitrocellulose systems, up to 25% of AC24-15 is used to improve film toughness and increase solids at application viscosity. If the formulator wishes to retain the characteristic nitrocellulose viscosity, a small percentage of a high viscosity grade of nitrocellulose solution can be added.

Physical Contants:
- Solids: 50+-1%
- Solvent: Toluol
- Viscosity (Gardner): W-Y
- Acid No.: 5-10
- Color: Water White
- Lbs./Gal.: 8.2+-0.1

DORESCO AC25-14:
DORESCO AC25-22:

DORESCO AC25-14 is a thermoplastic homopolymer formulated to be compatible with alkyd resins and soluble in aliphatic solvents. DORESCO AC25-14 is recommended for medium and long oil alkyds. Short oil alkyds must be tested for aliphatic solvent tolerance to determine miscibility with DORESCO AC25-14. If miscible, compatibility will be satisfactory. If not, DORESCO AC32-18 is recommended.

This resin can be used as the sole vehicle for architectural and industrial enamels, or to improve the hold-out, drying speed, durability, gloss and gloss retention of alkyds. Manufacturers of roof tile find that factory applied DORESCO AC25-14 provides a durable color retentive seal.

DORESCO AC25-22 is very similar to DORESCO AC25-14. There is a minor difference in the modification of the homopolymer.

Physical Constants:

DORESCO AC25-14:
- Solids: 45+-1%
- Solvent: Aliphatic
- Viscosity: V-X
- Color: Clear to hazy yellow
- Lbs./Gal.: 7.35+-0.1

DORESCO AC25-22:
- Solids: 45+-1%
- Solvent: VM&P Naphtha
- Viscosity: 800-1600 cps
- Color: Clear to hazy yellow
- Lbs./Gal.: 7.34+-0.1

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO AC25-25:

DORESCO AC25-5 is an alkyd-compatible acrylic resin solution. It is especially compatible with low kb solvents that can be used with long-oil alkyds. DORESCO AC25-25 can be helpful in upgrading the physical properties of alkyds for architectural enamels.

The ability of DORESCO AC25-25 to tolerate low KB solvents is a big advantage in the formulation of aerosols.

Physical Constants:
- Solids: 45%
- Solvents: Mineral Spirits
- Viscosity: 800-1600 cps
- Color: 2 Maximum
- Lbs./Gal.: 7.34+-0.1

DORESCO AC25-87:

DORESCO AC25-87 is an acrylic resin solution of relatively low molecular weight to help comply with VOC regulations. This resin wets pigment more effectively than conventional acrylic grinding vehicles. More pigment and filler can be ground into this vehicle with minimal viscosity increase. DORESCO AC25-87 is compatible with alkyds, urethanes and a broad spectrum of other resins.

Due to its excellent compatibility with alkyds and the general nature of acrylics to impart a lacquer dry, DORESCO AC25-87 is an excellent modifier. Tack free time in alkyd systems may be significantly shortened by incorporating this acrylic. DORESCO AC25-87 is also recommended as a modifier for low-VOC alkyds where its unique compatibility and molecular weight result in minimal viscosity increase.

To achieve broad compatibility and low molecular weight, DORESCO AC25-87 is made from monomers that do not yield a water white product. However color retention is good.

Physical Constants:
- Non-Volatiles: 50+-1%
- Viscosity, Gardner: H (Approx.)
- Color: Gardner 5 max.
- Solvent: Solvesso 100
- Lbs./Gal.: 7.92+-0.1

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO AC27-2:
DORESCO AC27-14:

DORESCO AC27-2 is a thermoplastic acrylic resin solution designed to provide the surface coating formulator with a product that can provide a great deal of versatility. This resin is compatible with vinyls, nitrocellulose, cellulose acetate butyrate, chlorinated rubber, and other non-oil modified coating resins. DORESCO AC27-2 imparts color retention, durability, and abrasion resistance. Hardness of this product is intermediate for thermoplastic acrylics.

DORESCO AC27-14 possesses the same chemical compatibility and characteristics as DORESCO AC27-2. However, it is lower in molecular weight in order to provide easier spraying and application via aerosol.

DORESCO AC27-2:

Solids: 50%
Solvent: Toluol
Viscosity: 3700-6200 cps.
Color: Water White
Lbs./Gal.: 8.36+-0.1

DORESCO AC27-14:

Solids: 50+-1%
Solvent: Toluol
Viscosity: 1350-2250 cps.
Color: Water White
Lbs./Gal.: 8.38+-0.1

DORESCO AC32-17:

DORESCO AC32-17 is a resin of medium hardness designed for use as-is or with short and medium oil alkyds. In alkyd systems, DORESCO AC32-17 improves solvent resistance, speed of dry, color retention and exterior durability.

It is used as a vehicle in aerosol paints, a grinding vehicle and as a general purpose thermoplastic acrylic resin solution. Most acrylics are poor pigment grinding vehicles. DORESCO AC32-17 can be added to other solution thermoplastic acrylics to improve pigment wetting.

The increased speed of dry imparted to alkyds renders DORESCO AC32-17 useful in formulating air drying machinery, toy, truck body and auto refinishing enamels. It can also be formulated as a silk-screen ink vehicle.

DORESCO AC32-17 is not a red-label product. This makes storage and handling easier than for many solution acrylic resins.

Solids: 50+-1%
Solvents: Solvesso 100
Viscosity: 4500-9000 cps.
Color: Water White
Lbs./Gal.: 8.27+-0.1

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO AC32-18:

DORESCO AC32-18 is a thermoplastic acrylic solution resin of medium hardness designed for use as is or with short, and medium oil alkyds. In alkyd systems it improves solvent resistance, speed of dry, and exterior durability. It is a vehicle in aerosol paints, a grinding vehicle and a general purpose thermoplastic acrylic resin solution. Most acrylics are poor pigment grinding vehicles. DORESCO AC32-18 can be added to other solution thermoplastic acrylics to improve pigment wetting.

The increased speed of dry imparted to alkyds by DORESCO AC32-18 is an advantage in formulating air drying machinery, toy, truck body and auto refinishing enamels. Color retention, durability, hardness, and adhesion of alkyds are improved when blended with DORESCO AC32-18.

Physical Constants:
- Solids: 50+-1%
- Solvent: Xylol, Toluol
- Viscosity (Gardner): 2400-3800 cps
- Color: 0-1
- Lbs./Gal.: 8.27+-0.1

DORESCO AC34-32:

DORESCO AC34-32 is a soft, high molecular weight, thermoplastic acrylic resin solution. The polymer, as supplied, is dissolved in acetone. This alleviates the commonly encountered problem of cutting soft, clumped beads into solution.

DORESCO AC34-32 is an effective adhesive for smooth plastic films and aluminum. Its high molecular weight and soft, flexible films make it an ideal adhesive for hot stamping.

DORESCO AC34-32 can be used as a modifier for a variety of other resins. It will plasticize and improve adhesion of harder acrylic resins as well as nitrocellulose. When DORESCO AC34-32 is formulated into solution vinyl based pigmented lacquers, outdoor durability will be improved.

Physical Constants:
- Non-Volatiles: 50+-1%
- Viscosity: 500 cps minimum
- Solvent: Acetone
- Color: Water White
- Lbs./Gal.: 7.56+-0.1

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO AC86-1:

DORESCO AC86-1 is a thermoplastic acrylic resin solution similar to DORESCO AC24-15; it is soluble in most organic solvents and will tolerate alcohols and aliphatics to some degree. However, DORESCO AC86-1 is higher in molecular weight than most thermoplastic acrylics and thus produces tougher films. Despite its higher molecular weight, it will spray well when diluted to sprayable viscosity.

It is used as an extender for nitrocellulose, in aerosol paint and lacquer formulations, in formulating cement driveway paints, and as a general purpose quality acrylic. Films of DORESCO AC86-1 exhibit ink acceptance.

Physical Constants:
- Solids: 45+1%
- Solvent: Toluene
- Viscosity: 5000-9000 cps.
- Color: Water White
- Lbs./Gal.: 8.10+-0.1

DORESCO AC86-4:

DORESCO AC86-4 is a thermoplastic acrylic resin solution similar to DORESCO AC24-15. Like DORESCO AC24-15, it is soluble in most organic solvents and will tolerate alcohols and aliphatics to some degree; however, it is higher in molecular weight and thus produces tougher films. Despite its higher molecular weight, it will spray well when diluted to sprayable viscosity.

It is used as an extender for nitrocellulose, in aerosol paint and lacquer formulations, and as a general purpose quality acrylic.

A novel use for DORESCO AC86-4 is in drafting films, in conjunction with other acrylics that are cured. In this system, DORESCO AC86-4 imparts ink toughness, ghosting resistance, and uniformity of film.

Physical Constants:
- Solids: 45+-1%
- Solvent: MEK
- Viscosity: 3000-6000 cps.
- Color: Water White
- Lbs./Gal.: 8.10+-0.1

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO AC92-9:
DORESCO AC92-9X:
DORESCO AC92-9 is a general purpose, medium hardness, medium molecular weight acrylic resin solution. It is soluble in most organic solvents and tolerates alcohols and aliphatics. Like most acrylics of the type, it is compatible with cellulosics, vinyls, chlorinated rubber, most monomeric and some polymeric plasticizers.

It is useful as a cement coating, in metal paints, in aerosols, and a host of other applications.

This resin has been carefully formulated with low cost monomers so that it is attractively priced with no reduction in quality.

Physical Constants:

DORESCO AC92-9:
Solids: 51+-1%
Solvents: Toluol
Viscosity: 2000-5000 cps
Color: Water White
Lbs./Gal.: 8.20+-0.1

DORESCO AC92-9X:
Solids: 50+-1%
Solvents: Xylol
Viscosity: 5000-8000 cps
Color: Water White
Lbs./Gal.: 8.20+-0.1

DORESCO AC102-8:
DORESCO AC102-8 is a soft, aliphatic soluble thermoplastic resin solution supplied in mineral spirits/Solvesso 100 at a ratio of 9/1. It is recommended as a clear over substrates that are sensitive to aromatic, ester, or ketone solvents. Caution should be used as DORESCO AC102-8 will soften just a few degrees over room temperature. Applications can be accomplished by dip, spray, brush, or roller. Upon drying, solvent resistance does not develop, so that chemical resistance is not as good as most other solution acrylics.

Physical Constants:
Solids: 40+-1%
Solvents: Mineral Spirits/Solvesso 100 9/1
Viscosity: 1400-2600 cps
Color: Water White
Lbs./Gal.: 7.9+-0.1

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO AC110-8:

DORESCO AC110-8 is a thermoplastic acrylic resin solution of intermediate hardness. Like all of these resins, it possesses excellent color retention and ultraviolet light resistance, durability, and oil and moisture resistance. It is soluble in esters, ketones, aromatics, and ether-alcohols. It will tolerate small quantities of aliphatics and alcohols. The acid number of DORESCO AC110-8 is less than typical for this class of resins.

The principal application for this product is formulating lacquers for transfer printing, providing films equal in quality to the highest grade wood lacquers.

Physical Constants:
- Solids: 40+-1%
- Solvents: Ethyl Acetate, Toluol
- Viscosity (Gardner): Z-Z3
- Color: Water White
- Lbs./Gal.: 8.02+-0.1

DORESCO AC129-3:

DORESCO AC129-3 is a higher than average molecular weight acrylic copolymer with a lower than average glass transition temperature. It has broader compatibility and a lower glass transition temperature than most solution acrylics. It is soluble in most organic solvents but only tolerates alcohols and aliphatics.

DORESCO AC129-3 can be formulated into a hot stamping transfer coated sealer for furniture by blending with appropriate film formers. In general, it is a versatile solution acrylic possessing outstanding color retention, oil and grease resistance, and all the other desirable solotion acrylic properties.

Physical Constants:
- Solids: 40+-1%
- Solvents: Ethyl Acetate, Toluol
- Acid No.: 2.0 max.
- Color: Water White
- Lbs./Gal.: 8.00+-0.1

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO AC143-2:

DORESCO AC143-2 is a hard copolymer acrylic resin solution recommended for use in the tracing film industry and in hot stamping foil manufacture. It is quite polar, mildly hydrophyllic and adhesion promoted. The Tg is somewhat higher than polymethyl methacrylate.

Physical Constants:
- Non-Volatiles: 33+-1%
- Viscosity: Approx. 1,000 cps
- Solvent: Toluol, MEK 1-1
- Color: Water White
- Lbs./gal.: 7.78+-0.1

DORESCO AC214-5:

DORESCO AC214-5 is a high solids all acrylic solution copolymer in xylol and methyl ethyl ketone. This is an experimental product designed to permit formulators to meet VOC requirements. Recommended uses include cement sealers, concrete curing membranes, caulks, and other general purpose solution acrylic applications.

Physical Constants:
- Solids: 70+-1%
- Solvents: Xylol, MEK
- Viscosity (Gardner): Approximately T
- Viscosity X65 MEK (Gardner): E-F
- Color, Gardner: 0-1
- Lbs./Gal.: 8.68+-0.1

DORESCO AC186-3:

DORESCO AC186-3 is a hard thermoplastic acrylic with excellent solvent resistance. Coatings based on AC186-3 are especially heat resistant. Color is excellent with excellent color retention.

DORESCO AC186-3 is supplied 30% in PM Acetate. If PM Acetate is not a desirable solvent, one should explore DORESCO AC7-4, AC13-1, and L91-17.

Physical Constants:
- Solids: 30.0+-1%
- Solvent: PM Acetate
- Viscosity: 700-1400 cps.
- Color: Water White
- Lbs./Gal.: 8.6+-.1

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO AC189-20:

DORESCO AC189-20 is an acrylic multipolymer, solvent based, dispersed resin. The acrylic is dispersed, rather than dissolved, in VM&P solvent and thus imparts unique properties.

The DORESCO AC189-20 polymer system is designed to be somewhat incompatible with its solvent system. This incompatibility induces uncharacteristically quick solvent release for acrylics. This attribute, as well as the low KB value of VM&P, makes this an excellent binder in fluorescent ink formulations for gravure application.

Further, DORESCO AC189-20 has lower viscosity (without sacrificing molecular weight) and harder film properties than conventional aliphatic soluble acrylics. This offers flexibility to a formulator that is not available with conventional acrylics.

Physical Contants:
- Solids: 45+-1%
- Solvent: VM&P
- Viscosity: 400-1200 cps
- Color: White
- Lbs./Gal.: 7.28+-0.1

DORESCO AC209-4:

DORESCO AC209-4 is a soft thermoplastic acrylic resin solution. The polymer, as supplied, is dissolved in toluene. This alleviates the commonly encountered problem of cutting soft, clumped beads into solution.

In addition to its high degree of flexibility, DORESCO AC209-4 has excellent adhesion. It is quite effective as a barrier coat for the conformal coating industry.

DORESCO AC209-4 can be used as a modifier for a variety of other resins. It will plasticize and improve adhesion of harder acrylic resins as well as nitrocellulose. When DORESCO AC209-4 is formulated into solution vinyl based pigmented lacquers, outdoor durability will be improved.

Physical Constants:
- Non-Volatiles: 50+-1.5%
- Viscosity: 2100-2200 cps
- Solvent: Toluol
- Color: Water White
- Lbs./Gal.: 7.96+-0.1

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO AC244-1:

DORESCO AC244-1 is an acid terminated all acrylic polymer, designed to replace wood rosin in marine finishes. It is used with metal oxides to formulate antifoulant paints. In order to function, the pH of the finished paint must be buffered so that the metal oxides remain metal oxides and do not undergo any chemical reactions. As the paint film wears away, fresh metal oxides are presented so that the paint remains active against barnacles.

Physical Constants:
- Solids: 45+-1%
- Solvents: Xylol, Butanol
- Viscosity: Z5-Z7
- Acid No.: 70-80
- Appearance: Water White
- Lbs./Gal.: 8.0+-0.1

DORESCO AC246-1:
DORESCO AC246-8:

DORESCO AC246-1 is a high molecular weight, high Tg acrylic resin solution in Ethyl Acetate. The high Tg causes brittleness and requires modification or high temperatures in order to form a film. The high molecular weight results in a relatively tough film.

Compatibility with nitrocellulose and vinyls is poor. Modifications must be carefully tested.

DORESCO AC246-1 is recommended as a top coat in hot stamping foils due to the ease with which this brittle product fractures. The durability, color retention, and other desirable film properties of acrylics are inherent in this polymer.

DORESCO AC246-8 is a similar polymer to AC246-1 but is in toluene.

Physical Constants:

DORESCO AC246-1:
- Solids: 45+-1%
- Viscosity, Gardner: Approx. Z3
- Solvent: Ethyl Acetate
- Color: Water White to Pale Yellow

DORESCO AC246-8:
- Solids: 45+-1%
- Viscosity, Gardner: Approx. Z3
- Solvent: Toluene
- Color: Water White to Pale Yellow
- Pounds per Gallon: 8.0+-0.1

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO AC253-2:

DORESCO AC253-2 is a high Tg acrylic resin solution in Toluol. The high Tg causes brittleness and requires modification or high temperatures in order to form a film. This material is slightly lower in Tg than AC246 series. This creates a slightly tougher film.

DORESCO AC253-2 is a compromise from the DORESCO AC246 series. By reducing, slightly, the Tg, compatibility with nitrocellulose is achieved. Thus, formulating an end product to achieve tougher films with less surface mar becomes possible.

DORESCO AC253-2 is recommended as a top coat in hot stamping foils due to the ease with which this brittle product fractures. The durability, color retention, and other desirable film properties of acrylics are inherent in this polymer.

Physical Constants:
- Solids: 45+-1%
- Viscosity, Gardner: Approx. Z3
- Solvent: Toluol
- Color: Water white to slight pink
- Pounds per gallon: 8.08+-0.1

DORESCO L91-1:
DORESCO L91-1X:

DORESCO L91-1 is a thermoplastic acrylic copolymer solution, supplied at 51% solids in toluol, and 50% in xylol. It is soluble in aromatic, ketone, ester, and ether-ester solvents; insoluble in alcohols, and tolerates aliphatic solvents. It is compatible with most monomeric plasticizers, some polymeric plasticizers, most vinyl resins, parlon and nitrocellulose. It is not compatible with most alkyds, or butylated ureas and melamines. DORESCO L91-1X has a higher viscosity than DORESCO L91-1.

DORESCO L91-1 dries with rapid solvent release to a water white, brittle but durable film possessing good resistance to water, acids, alkalis, and oils.

Physical Constants:

DORESCO L91-1:
- Solids: 51+-1%
- Solvent: Toluol
- Viscosity: 2000-5000 cps
- Color: Water White
- Lbs./Gal.: 8.2+-0.1

DORESCO L91-1X:
- Solids: 50+-1%
- Solvent: Xylol
- Viscosity: 5000-8000 cps
- Color: Water White
- Lbs./Gal.: 8.2+-0.1

DOOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO L91-17:

DORESCO L91-17 is a thermoplastic acrylic solution homopolymer supplied at 40% solids in methyl ethyl ketone. It dries with extremely rapid solvent release forming a hard, brittle, durable, clear, colorless film that is resistant to heat, alcohol, acids, alkalis, water and oils. It is soluble in aromatics, ketones, esters, and ether esters. DORESCO L91-17 tolerates small amounts of alcohols and is insoluble in aliphatics.

DORESCO L91-17 is compatible with most vinyl resins, most acrylic resins, epoxies, and monomeric plasticizers. It is not compatible with alkyds, ureas, melamines, parlon, or ethyl cellulose.

The primary uses for DORESCO L91-17 are in formulating heat resistant enamels and in modifying polyvinyl chloride and polyvinyl chloride-acetate resins. Typical applications are automotive primers, premium quality wood finishes, and vinyl inks.

Physical Constants:
- Solids: 40+-2%
- Solvents: Methyl Ethyl Ketone
- Viscosity: Z1-Z5
- Color: Water White
- Lbs./Gal.: 7.85+-0.1

DORESCO SA1-3:

DORESCO SA1-3 is a thermoplastic styrenated acrylic resin recommended as a base for caulks and sealants. DORESCO SA1-3 offers a cost savings versus acrylic-only resins. It has excellent adhesion to a variety of substrates and exhibits good water resistance. DORESCO SA1-3 has good toughness and flexibility.

In general, this resin can be used in place of higher priced acrylics where outstanding color retention of acrylics is not needed.

Physical Constants:
- Solids: 60+-1.5%
- Solvent: Solvesso 100
- Viscosity: 40,000-60,000 cps.
- Lbs./Gal.: 8.00+-0.15

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO SA2-5:
DORESCO SA2-5 is a thermoplastic styrenated acrylic copolymer resin with good tolerance for mineral spirits, even at low temperatures. DORESCO SA2-5 offers a cost savings versus acrylic-only resins for those applications where color retention is not quite as critical. It is ideal for cement sealers that specify performance rather than composition.

DORESCO SA2-5 is resistant to water and chemicals. It has good flexibility and will adhere to a broad number of substrates. DORESCO SA2-5 will fuse to brick. This resin has film forming characteristics which render it suitable for maintenance paints.

This product at 18% solids has been approved by the Department of Transportation of the State of New Jersey as a concrete curing compound. It exceeded the requirements of ASTM 309.

Physical Constants:
Solids: 50+-1%
Solvents: Solvesso 100
Viscosity (Gardner): U-Z1
Color (Gardner): 0-1
Lbs./Gal.: 7.90+-0.15
Tg: 26.4C

DORESCO SA2-10:
DORESCO SA2-10 is a thermoplastic styrenated acrylic resin with complete solubility in mineral spirits, even at low temperatures. DORESCO SA2-10 offers a cost savings versus acrylic-only resins for those applications where color retention is important but not as critical. It is ideal for cement sealers which specify performance rather than composition.

DORESCO SA2-10 is resistant to water and chemicals. It has good flexibility and will adhere to a broad variety of substrates. This resin has film forming characteristics which render it suitable for maintenance paint formulation.

Physical Constants:
Solids: 50+-1%
Solvent: Mineral Spirits
Viscosity (Gardner): X-Z1
Color (Gardner): 0-1
Lbs./Gal.: 7.58+-0.15
Tg: 29.0C

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO SA4-3:

DORESCO SA4-3 is a thermoplastic styrenated acrylic copolymer resin in toluene. DORESCO SA4-3 offers a cost savings versus acrylic-only resins for those applications where color retention is not quite as critical. It has a higher styrene content than does SA2-5 resulting in a high glass transition temperature. It is ideal for cement sealers that specify performance rather than composition.

DORESCO SA4-3 is resistant to water and chemicals. It will adhere to a broad number of substrates. This resin has film-forming characteristics which render it suitable for maintenance paints.

Physical Constants:

Non Volatiles: 50.0+-1%
Solvent: Solvessso 100
Viscosity (Gardner): X-Z
Color (Gardner): 0-1
Lbs./Gal.: 7.94+-.15

DORESCO TA1-15:

DORESCO TA1-15 is a thermosetting acrylic terpolymer. This resin is recommmended for use with butylated and methylated melamine resins plus a small quantity of epoxy resin to formulate premium quality appliance enamels. Color retention, adhesion, flexibility, and detergent resistance are sufficient to meet the highest appliance enamel quality standards.

This resin can be manufactured in other solvents when requested.

Physical Constants:

Solids: 55+-1%
Solvents 85/15: Xylol, Butyl Cellosolve
Viscosity: Y-Z1
Color (Gardner): 0-1
Lbs./Gal.: 8.40+-0.1

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO TA1-45:

DORESCO TA1-45 is a complete, self-curing acrylic-amine vehicle designed to produce high quality baking enamels. It has been formulated into enamels for end uses as varied as appliances, yard riding lawn mowers, and glass jar labels applied directly onto glass and baked at 450-500 degrees Fahrenheit. All of the common solvents except lower alcohols and aliphatics are suitable thinners. Depending on the baking cycle, anywhere from 0 to 3% paratoluene sulfonic acid or other suitable acid catalyst is recommended.

Physical Constants:
- Solids: 50+-1%
- Solvents: Xylol, Toluol, Butyl Cellosolve
- Viscosity (Gardner): N-V
- Color (Gardner): 2 max.
- Lbs./Gal.: 8.15+-0.1

DORESCO TA19-7:

DORESCO TA19-7 is an hydroxy and acid containing acrylic resin solution. It is recommended for use as an acrylic baking enamel vehicle. Cymel 303 at approximately 20% by weight on a solids basis is the recommended cross linking agent. This resin is compatible with most of the common organic solvents. DORESCO G-17 catalyst, a 50% solution of paratoluene sulfonic acid, at approximately 1% of the vehicle solids, is a good starting concentration of catalyst.

If more hardness is required, the amount of CYMEL 303 can be increased. The catalyst should be incorporated just prior to use. The resultant enamel is of excellent quality.

Physical Constants:
- Solids: 50+-1%
- Solvents: Xylol, Butanol
- Viscosity: 1000-3000 cps
- Color, Gardner: 0-1
- Lbs./Gal.: 8.0+-0.1

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO TA22-1:

DORESCO TA22-1 is a premium coating vehicle in isopropyl alcohol and methyl ethyl ketone. It is soluble in water and ammonia. Care must be taken in formulating aqueous coatings with DORESCO TA22-1 to avoid loss of gloss. DORESCO TA22-1 has adhesion to a broad variety of substrates including cement, metal and glass. On air drying, DORESCO TA22-1 cures and develops excellent chemical resistance to 1,1,1, trichloroethylene, gasoline and aromatic solvents. DORESCO TA22-1 exhibits the excellent ultra-violet resistance of acrylic polymers; however, resistance to lower alcohols and water spotting is inadequate.

The chemical resistance of emulsions can be enhanced by adding DORESCO TA22-1. If the emulsion is alkaline, DORESCO TA22-1 should be made alkaline with water and ammonia and blended, under agitation, into the emulsion. If the emulsion is acid, DORESCO TA22-1 must be emulsified into the system. If the system is compatible, improved properties result.

The speed and degree of cure of DORESCO TA22-1 can be enhanced by using 2%, on a solids basis, of paratoluene sulfonic acid as a catalyst in baking systems. Paratoluene sulfonic acid does not improve air drying systems.

Physical Constants:
Solids: 37-40%
Solvents: Isopropyl Alcohol, Methyl Ethyl Ketone
Viscosity (Gardner): U-W
Color (Gardner): 1 Max.
Lbs./Gal.: 7.7+-0.1

DORESCO TA22-8:
DORESCO TA22-20:

DORESCO TA22-8 and TA22-20 are premium coating vehicles in ethyl alcohol and acetone with an increased cross-linking density over DORESCO TA22-1. They are soluble in water and ammonia. Care must be taken in formulating aqueous coatings to avoid loss of gloss. DOERSCO TA22-8 and TA22-20 have adhesion to a broad variety of substrates including cement, metal and glass. DORESCO TA22-20 contains a specialized monomer to promote adhesion to mylar. Catalyzed with sulfonic acids and with slight heat, DORESCO TA22-8 and TA22-20 cure and develop excellent chemical resistance to 1,1,1, trichloroethylene, gasoline and aromatic solvents. This is apparent as the coating will withstand over 200 MEK rubs. DORESCO TA22-8 and TA22-20 exhibit the excellent ultra-violet resistance of acrylic polymers.

The chemical resistance of emulsions can be enhanced by adding DORESCO TA22-8 or TA22-20. If the emulsion is alkaline, DORESCO TA22-8 or TA22-20 should be made alkaline with water and ammonia and blended, under agitation, into the emulsion. If the emulsion is acid, DORESCO TA22-8 or TA22-20 must be emulsified into the system. If the system is compatible, improved properties result.

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO TA22-8(Continued):
DORESCO TA22-20(Continued):

DORESCO TA22-8 and TA22-20 are best cured using 2%, on a solids basis, of paratoluene sulfonic acid as a catalyst in a low energy baking system. Paratoluene sulfonic acid does not improve air drying systems.

Physical Constants:

DORESCO TA22-8:
Solids: 30+-1%
Solvents: Ethyl Alcohol/Acetone
Viscosity: approx. 650 cps
Color (Gardner): 1 Max.
Lbs./Gal.: 7.64+-.1

DORESCO TA22-20:
Solids: 30+-1%
Solvents: Ethyl Alcohol/Acetone
Viscosity: approx. 650 cps
Color (Gardner): 1 Max.
Lbs./Gal.: 7.62+-.1

DORESCO TA22-27:

DORESCO TA22-27 is a premium coating vehicle in isopropyl alcohol and methyl ethyl ketone. It was designed specifically as a vehicle to be used to manufacture conformal coatings.

The unique feature of the polymer structure of DORESCO TA22-27 is its ability to provide the attributes of both a thermosetting urethane, epoxy, or silicone system and a thermoplastic acrylic system. The conformal coating can be cleaned with regular chlorinated solvents without disturbing the coating. However, the coating based on DORESCO TA22-27 can be removed using methyl pyrrolidone when repairs in circuitry are necessary. When repairs are completed, a fresh coating can be applied.

The speed and degree of cure of DORESCO TA22-27 can be enhanced by using 2%, on a solids basis, of paratoluene sulfonic or other acid as a catalyst in baking systems. Paratoluene sulfonic acid does not improve air drying systems. Mild baking is sufficient.

Physical Constants:
Solids: 38+-1%
Solvents: Isopropyl Alcohol,
Methyl Ethyl Ketone
Viscosity (Gardner): approx. R
Color (Gardner): 1 Max.
Lbs./Gal.: 7.7+-0.1

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO TA43-6:
DORESCO TA43-8:

DORESCO TA43-6 and DORESCO TA43-8 are functional acrylics designed specifically to crosslink with conventional epoxies.

Coatings formulated with TA43-series products have better chemical and abrasion resistance, increased toughness, and better adhesion to most substrates than conventional acrylics. Similarly, these coatings have advantages versus conventional epoxies alone. They have good color retention and gloss. Furthermore, they tend not to chalk which is contrast to most epoxy systems.

Coatings formulated with TA43-6 or TA43-8 cure under ambient conditions. This system has advantages over two package urethanes such as a significant cost savings, no toxic isocyanates, etc.

To achieve different properties, one may wish to formulate a coating system with a higher or lower acrylic/epoxy ratio. With this system, however, one must formulate in stoicheometric proportions. To accomodate formulating versatility, TA43-6 and TA43-8 were designed with different equivalent weights. DORESCO TA43-6 requires more epoxy than does TA43-8. Therefore, TA43-6 is ultimately more resistant, both chemically and physically, but takes longer to cure.

Physical Constants:

DORESCO TA43-6:
- Solids: 50+-1%
- Solvent: xylene
- Viscosity, Gardner: approx. X
- Color, Gardner: 3 max.
- Equiv. weight on N.V.: 524
- Tack free time*: 30 mins.
- Full cure time*: 5 days
- Pot life to gell*: 4 days

DORESCO TA43-8:
- Solids: 50+-1%
- Solvent: xylene
- Viscosity, Gardner: approx. X
- Color, Gardner: 3 max.
- Equiv. weight on N.V.: 927
- Tack free time*: 30 mins.
- Full cure time*: 5 days
- Pot life to gell*: >1 week

* Evaluated at ambient conditions with no initiator

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO TA45-5:

DORESCO TA45-5 is an acrylic polyol in xylol designed to react with aliphatic isocyanates to produce hard, durable coatings with excellent chemical and abrasion resistance.

When use as a topcoat, these products provide the excellent gloss, color retention, and durability required for heavy duty maintenance applications. Gloss retention is superior to polyester urethanes. In certain instances, UV absorbers can be added to improve the already good performance.

Coatings developed with DORESCO TA45-5 develop better properties with the addition of .01 to .05 percent of a tin catalyst based on resin solids. Lower catalyst levels promote better chemical resistance and extended pot life. Higher catalyst concentrations provide very rapid cure times.

DORESCO TA45 series products dispersed in other solvents are also available.

Physical Constants:

- Non-volatiles: 58+-1%
- Solvent: xylol
- Viscosity (cps): 4000-9000
- Color (Gardner): 0-1
- Lbs./gal.: 8.5+-0.1
- Equiv. weight (OH on solids): 600

DORESCO TA13-52:

DORESCO TA13-52 is an experimental hydroxy and acid containing acrylic resin solution. It is recommended as an ingredient in formulating high solids baking enamels. Cymel 303 at approximately 25% by weight on a solids basis is the recommended cross linking agent. This resin is compatible with most of the common organic solvents and is rapidly reduced in viscosity by ketones. DORESCO G17, a 50% solution of paratoluene sulfonic acid, at approximately 2% of the vehicle solids, is a good starting concentration of catalyst.

If more hardness is required, the amount of Cymel 303 can be increased. The catalyst should be incorporated just prior to use. The resultant enamel is of excellent quality.

The hydroxyl content of DORESCO TA13-52 enables the coating formulator to produce high quality high solids urethanes by reacting with an appropriate isocyanate.

Physical Contants:

- Solids: 80+-1%
- Solvent: EEP, MAK
- Viscosity (Gardner): Z2-Z3
- Acid No.: Approx 16
- Color (Gardner): 4 max
- Lbs./Gal.: 8.80+-0.1
- Hydroxyl Number: 120 approx.

DOCK RESINS CORP.: Acrylic Resins(Continued):

DORESCO MIS145-13:

DORESCO MIS145-13 is a functional acrylic resin in a blend of ester solvents. It is effectively crosslinked by both conventional and light-stable epoxy resins.

Coating characteristics will vary with the epoxy. These properties range from improved epoxy coatings high performance finishes similar to urethanes. DORESCO MIS145-13 is cheaper and easier to apply than two package urethane coatings. Further, this system contains no toxic isocyanates. The polymer is inert.

Acrylic-epoxy ratios will vary according to the equivalent weight of the epoxy and the properties desired. It is recommended to begin formulating at a ratio of one equivalent epoxy to one equivalent acrylic.

Physical Constants:
- Non Volatiles: 40+-1%
- Solvents: n-butyl acetate
  PM Acetate
  EEP solvent
- Viscosity, Gardner: B-D
- Color, Gardner: 0+ max.
- Equiv. weight on N.V.: 780
- Acid number on N.V.: 114-124
- Pounds per gallon: 9.04+-0.1

DORESCO AA53-16:

DORESCO AA53-16 is an acrylic multipolymer designed especially to produce finishes possessing outstanding chemical and temperature resistance. It contains both hydroxyl and carboxyl functionalities. Thus, the formulator can select isocyanates or phenolic or melamine resins to react with the free hydroxyl groups, and/or epoxies to react with the free carboxyl present. This enables the formulator to achieve a variety of cross linking mechanisms and cross link density.

DORESCO AA53-16 is adhesion promoted and very polar so that a variety of substrates can be coated successfully. This product has been formulated into an adhesive that adheres copper to KAPTON in electronic applications requiring soldering. In general, a wide variety of adherent resistant coatings can be made from DORESCO AA53-16.

Physical Constants:
- Solids: 40+-1%
- Solvent: MEK
- Viscosity (Gardner): X-Z2 (Typical)
- Acid No.: 13-19
- Lbs./Gal.: 7.5+-0.1

DOCK RESINS CORP.: Acrylic Solution Release Agents:

DORESCO RA17-1:
DORESCO RA18-1:
DORESCO RA44-6:

DORESCO RA17-1, DORESCO RA18-1, and DORESCO RA44-6 are acrylic release resins designed for the manufacture of adhesive tapes. These products possess adhesion to polyester, polyolefin, cellophane and other substrates. As a result, consistent controlled release is obtained. A thin film is recommended. Depositing a film from 2-5% solution, depending on coating technique, is most common and results in best performance.

DORESCO RA44-6 gives lowest release values; DORESCO RA17-1 somewhat higher values; DORESCO RA18-1 produces the tightest release of the three.

These resins produce release values, depending upon the mass, of 20-30 ounces; silicones produce release values of a fraction of an ounce. Thus, these coatings are for general purpose tapes as opposed to the specialized silicone applications.

All of these standard products contain some residual acrylonitrile. Dock Resins Corp. can process these products further, to less than 0.1% free acrylonitrile monomer, for users who wish to avoid the carcinogenic precautionary label. There is a premium charged for this further processing.

Upon aging, viscosities can increase due to hydrogen bonding. This will not affect performance.

Physical Constants:

RA17-1:
- Solids: 25+-1%
- Viscosity (cps): 25
- Color: 12 max.
- Res. Mon.*: 5% max.
- Clarity: clear

RA18-1:
- Solids: 33+-1.5%
- Viscosity (cps): 10-60
- Color: Amber
- Res. Mon.*: 5% max.
- Clarity: clear

RA44-6:
- Solids: 20+-1%
- Viscosity (cps): Z Max
- Color: Amber
- Res. Mon.*: 5% max.
- Clarity: clear

* Residual monomer is 80-90% Stearyl Methacrylate plus small concentrations of other acrylic monomers.

FREEMAN POLYMERS DIVISION: Conventional Acrylic Resins:
Thermoplastics:

A-2081-A1:
% NVM by Wt.: 50.0
Solvent: Toluene
Viscosity: Y-Z1
Reduced Viscosity: Vis: J-M
NV: 40
Reducer: Toluene
Gardner Color Max.: 1
A.N. Max. (Solids Basis): 4.0
Lbs./Gal.: 8.10
Fast dry and hard films, good compatibility with other film formers used in modified acrylic alkyd copolymers

A-2082-N6:
% NVM by Wt.: 45.0
Solvent: MS
Viscosity: V-X
Gardner Color Max.: 1
A.N. Max. (Solids Basis): 1.0
Lbs./Gal.: 7.25
Aliphatic soluble, compatible with medium oil alkyds, improved dry and gloss retention, useful in coating plastics

A-222-A1:
% NVM by Wt.: 50.0
Solvent: Toluene
Viscosity: W-Y
Gardner Color Max.: 1
A.N. Max. (Solids Basis): 10.0
Lbs./Gal.: 8.20
Auto refinish, excellent durability, resistant to grease & chemicals, air dry or force cure

A-468-A2:
% NVM by Wt.: 50.0
Solvent: Xylene
Viscosity: Y-Z1
Reduced Viscosity: Vis: I
NV: 40
Reducer: Xylene
Gardner Color Max.: 3
A.N. Max. (Solids Basis): 4.0
Lbs./Gal.: 8.20
Excellent compatibility, good exterior durability, fast dry time and good gasoline resistance

FREEMAN POLYMERS DIVISION: Conventional Acrylic Resins: Thermoplastics(Continued):

A-3201-M1:
% NVM by Wt.: 63
Solvent: MPK/Toluene: 80/20
Viscosity: R-T
Gardner Color Max.: 2
A.N. Max. (Solids Basis): 3.0
Lbs./Gal.: 8.16
Higher solids acrylic for modifying high solids alkyds to improve dry, durability and hardness

Thermosetting Acrylic:

17-0055:
% NVM by Wt.: 60.0
Solvent: High Flash VM&P/Butanol: 50/50
Viscosity: V-W
Reduced Viscosity: Vis: F-G
NV: 50
Reducer: Xylene
Gardner Color Max.: 1
A.N. Max. (Solids Basis): 20.0
Lbs./Gal.: 7.95
Equiv. Weight (Solids): 550
Automotive quality, high gloss, mar resistant, excellent gloss and color retention

17-0069:
% NVM by Wt.: 50.0
Solvent: SC 150/Xylene/EEP: 84/10/6
Viscosity: Y-Z1
Reduced Viscosity: Vis: M
NV: 40
Reducer: SC 150
Gardner Color Max.: 2
A.N. Max. (Solids Basis): 12.0
Lbs./Gal.: 8.30
Low cost, coil vehicle, excellent flexibility, durability and adhesion

FREEMAN POLYMERS DIVISION: Conventional Acrylic Resins: Thermosetting Acrylic(Continued):

17-0399:
% NVM by Wt.: 50.0
Solvent: Xylene
Viscosity: U-W
Reduced Viscosity: Vis: G-I
NV: 40
Reducer: Xylene
Gardner Color Max.: 1
A.N. Max. (Solids Basis): 15.0
Lbs./Gal.: 8.10
Equiv. Weight (Solids): 815
Excellent gloss retention, overbake color retention, salt spray and humidity resistance, may be cured with isocyanates

17-0645:
% NVM by Wt.: 50.0
Solvent: Xylene
Viscosity: Y-Z1
Reduced Viscosity: Vis: O
NV: 40
Reducer: Xylene
Gardner Color Max.: 2
A.N. Max. (Solids Basis): 18.0
Lbs./Gal.: 8.18
Equiv. Weight (Solids): 1039
Excellent hardness and flexibility, good durability, may be cured with isocyanates

17-0879:
% NVM by Wt.: 50.0
Solvent: PM Acetate/Butanol/Toluene: 68/20/12
Viscosity: T-V
Reduced Viscosity: Vis: F
NV: 40
Reducer: PM Acetate
Gardner Color Max.: 1
A.N. Max. (Solids Basis): 9.0
Lbs./Gal.: 8.30
Exempt solvents general purpose thermosetting acrylic provides high gloss, mar resistance and durability

FREEMAN POLYMERS DIVISION: Conventional Acrylic Resins: Thermosetting Acrylic(Continued):

17-2115:
% NVM by Wt.: 50.0
Solvent: Xylene/Butanol/Diacetone Alcohol: 75/15/10
Viscosity: V-X
Reduced Viscosity: Vis: L-M
NV: 40
Reducer: Xylene
Gardner Color Max.: 1
A.N. Max. (Solids Basis): 36.0
Lbs./Gal.: 8.10
Economical, carboxyl functional, exceptional salt spray, humidity and detergent resistance, for appliance enamels

17-3210:
% NVM by Wt.: 50.0
Solvent: Xylene/Butanol: 80/20
Viscosity: V-Y
Reduced Viscosity: Vis: G-J
NV: 40
Reducer: Xylene
Gardner Color Max.: 5
A.N. Max. (Solids Basis): 10
Lbs./Gal.: 8.7
Equiv. Weight (Solids): 1368
Good hardness, excellent gloss, color retention, moisture and chemical resistance

17-3284:
% NVM by Wt.: 60.0
Solvent: PM acetate
Viscosity: Z3-Z5
Gardner Color Max.: 1
A.N. Max. (Solids Basis): 72.0
Lbs./Gal.: 8.8
Carboxyl functional, metal deco, good over bake resistance and flexibility

17-3621:
% NVM by Wt.: 60.0
Solvent: Butoxyethanol
Viscosity: Z-Z2
Gardner Color Max.: 1
A.N. Max. (Solids Basis): 19.0
Lbs./Gal.: 8.60
Equiv. Weight (Solids): 430
Hydroxy functional, excellent gloss, durability, chemical resistance and cure response

GOODYEAR CHEMICALS: PLIOWAY Resins:

PLIOWAY EC1 is a film forming newtonian resin soluble in low odor "aromatic free" solvents. The selection of monomers in PLIOWAY EC1 gives it the exceptional solubility needed for special odorless interior paints as well as the durability required for exterior masonry and concrete coatings.

GOODYEAR has developed PLIOWAY EC-L and PLIOWAY EC-T, two new acrylic film forming rheological resins soluble in virtually odorless, aromatic free solvents. These two new resins are part of the PLIOWAY program, Goodyear's commitment to produce ecological resins for environmentally acceptable paints.

PLIOWAY EC1:
White Friable Granules
Specific Gravity: 1.03
Softening Point C (R&B): 130-140
Minimum Solvent Requirement (KB): 27

PLIOWAY EC-L:
White Friable Granules
Specific Gravity: 1.03
Softening Point C (R&B): >190
Minimum Solvent Requirement (KB): 32
Viscosity: Thixotropic Gel

PLIOWAY EC-T:
White Friable Granules
Specific Gravity: 1.03
Softening Point C (R&B): >190
Minimum Solvent Requirement (KB): 32
Viscosity: Pseudoplastic Gel

HENKEL: G-CRYL 5000 Solid Acrylic Resin:

G-CRYL 5000 is a new acrylic resin designed for water, alcohol or glycol-based inks, coatings and overprint varnishes. It is a multipurpose, mid-range molecular weight resin which offers flexibility to the formulator for a variety of applications where good pigment dispersion, high gloss, holdout, transfer and printability of aqueous or solvent inks are a must. It is compatible with commonly used styrene/acrylic emulsions, SMA resins, nitrocellulose and polyamide resins. G-CRYL 5000 can be dissolved in ammoniacal water at approximately 140F. For formulator convenience, a 35% solids solution in aqueous ammonia as available as G-CRYL 535.

Key Benefits:
- Low viscosity and higher solids
- Excellent pigment dispersion properties for inks, color chips and presscakes
- Good gloss and holdout
- Good water and wet rub resistance
- Excellent transfer and printability
- Broad compatibility range
- Good block resistance
- Useful in both solvent and water systems

Typical Properties:
Appearance: Clear, solid resin
Acid Number: 200
Softening Point (B&R): 130C
Non-volatile (minimum): 97%
Specific Gravity: 1.05

Preparation of G-CRYL 535 Solution:

Composition	Wt. %
G-CRYL 5000	35.0
28% Ammonia	7.5
Isopropanol	5.0
Propylene glycol	1.5
Water	51.0

Typical Properties:
pH: 8.0-8.5
Viscosity, cps: 2300-3300

HENKEL: G-CRYL 5001 Solid Acrylic Resin:

G-CRYL 5001 is a new acrylic resin designed for waterborne alkali or detergent resistant ink, coating and overprint varnish applications. While many alkaline resistant systems demonstrate poor resolubility on the press, G-CRYL 5001 systems have excellent resolubility and transfer properties. G-CRYL 5001 can be dissolved in ammoniacal water at approximately 140F. For formulator convenience, a 30% solids solution in aqueous ammonia is available as G-CRYL 130.

Key Benefits:
- High alkali and detergent resistance
- Excellent water resistance
- Good resolubility properties
- Excellent pigment wetting and transfer
- Broad compatibility range

Typical Properties:
Appearance: Clear, solid resin
Acid Number: 135
Softening Point (B&R): 110C
Non-volatile (minimum): 97%
Specific Gravity: 1.05

Preparation of G-CRYL 130 Solution:

Composition:	Wt. %
G-CRYL 5001	30.0
28% Ammonia	4.0
n-Propanol	10.0
Water	56.0

Typical Properties:
pH: 8.0-8.5
Viscosity, cps: 1000-2000

HENKEL: G-CRYL 5003 Solid Acrylic Resin:

G-CRYL 5003 is a new acrylic resin specifically designed for waterborne gravure applied inks and coatings. Aqueous solutions can be used for high gloss overprint varnishes and as grinding vehicles for pigmented inks and coatings. This specially designed medium hardness resin gives low viscosity, high solids vehicles which dry very fast in gravure applications. When combined with emulsion polymers such as G-CRYL 1124, 1138 and 2000, very high gloss overprint varnishes are achievable with fast drying speed and resolubility. G-CRYL 5002 can be dissolved in ammoniacal water at approximately 140F. For formulator convenience, a 45% solids solution in aqueous ammonia is available as G-CRYL 345.

Key Benefits:
- High solids and low viscosity
- High gloss and holdout
- Excellent pigment wetting, transfer and printability
- Broad compatibility range
- Good rub and water resistance

Typical Properties:
Appearance: Clear, solid resin
Acid Number: 215
Softening Point (B&R): 125C
Non-volatile (minimum): 97%
Specific Gravity: 1.05

Preparation of G-CRYL 345 Solution:

Composition:	Wt. %
G-CRYL 5003	45.0
28% Ammonia	10.5
Isopropanol	10.0
Water	34.5

Typical Properties:
pH: 8.0-8.5
Viscosity, cps: 1300-2300

HENKEL: G-CRYL 5004 Solid Acrylic Resin:

G-CRYL 5004 is a new acrylic resin designed for flexo/gravure ink and coating applications where high gloss, good pigment wetting, printability and transfer are desired. It is an outstanding resin for pigment dispersion, color chips and presscakes as well as a vehicle modifier to impart block resistance in inks and coatings. G-CRYL 5004 can be used in aqueous or solvent thermosetting systems requiring good carboxyl reactivity at low temperatures. As a modifying resin it can be used to replace up to 20% dry nitrocellulose without loss of heat resistance. When combined with emulsion polymers such as G-CRYL 1124, 1138 and 2000, high gloss inks and coatings are achievable with fast drying speed and resolubility. G-CRYL 5004 can be dissolved in ammoniacal water at approximately 140F.

Key Benefits:
- High softening point and good heat resistance
- High gloss and holdout
- Excellent pigment wetting, transfer and printability
- Excellent water, grease and heat resistance
- Broad compatibility range

Typical Properties:
Appearance: Clear, solid resin
Acid Number: 200
Softening Point (B&R): 135C
Non-volatile (minimum): 97%
Specific Gravity: 1.05

Preparation of G-CRYL 5004 Solution:

Composition:	Wt. %
G-CRYL 5004	30.0
28% Ammonia	6.0
Water	64.0

Typical Properties:
pH: 8.0-8.5
Viscosity, cps: 5,000-12,000

HI-TEK POLYMERS, INC.: POLY-TEX 975 Acrylic Resin:

POLY-TEX 975 Acrylic Resin, a hydroxyl functional resin solution supplied at 70 percent nonvolatiles in n-butyl acetate is recommended for use with polymers containing isocyanate functionality in two component urethane coatings. The primary use for such acrylic urethane coatings is in industrial maintenance applications requiring exceptional weatherability in terms of both durability and aesthetics.

Industrial applications for these coatings include implement enamels and coatings for large machinery and equipment where the film's high performance requirements for these applications must be achieved at ambient temperatures. Also, these systems may be used in applications where "force-dried" bake schedules (120 to 200F) are utilized as well as in high bake systems which employ blocked isocyanate crosslinkers.

Performance Highlights:
- Exceptional weatherability
- Excellent gloss and hardness development
- Excellent resistance to water and humidity
- Very good resistance to stains, chemical spills and gasoline
- Ambient and/or elevated temperature cures

Suggested End Uses:
- Maintenance coatings with exterior durability
- Industrial coatings cured at ambient or "force dried" conditions
- Single component baking systems with blocked isocyanate crosslinkers or with amino type curing resins

Typical Properties:
Viscosity, Gardner-Holdt: Z4
Nonvolatiles, percent: 70
Pounds/Gallon:
Solution: 8.61
Solids, calculated: 9.41
Color, Gardner, maximum: 2
Solvent: n-butyl acetate
Hydroxyl Equivalent Weight, solids: 365
Flashpoint, Setaflash, F: 81

HI-TEK POLYMERS, INC.: POLY-TEX 9008 Acrylic Resin:

POLY-TEX 9008 is a hydroxyl functional acrylic polymer solution supplied at 65% nonvolatile in methyl propyl ketone. It is designed for use in thermosetting industrial finishing applications where maximum exterior durability is important. POLY-TEX 9008 is intended to be crosslinked with amino crosslinkers at baking temperatures as low as 250F. Coatings based on POLY-TEX 9008 exhibit outstanding gloss and color retention both in exterior exposures and on overbake.

Performance Highlights:
- Exceptional exterior durability
- Non-yellowing on overbake
- Superior water and humidity resistance
- Good chemical and stain resistance

Suggested End Uses:
POLY-TEX 9008 is intended for use in baking enamels for a variety of industrial and product finishing applications. It should be useful in modifying polyester resins to improve exterior durability, film hardness and chemical resistance.
POLY-TEX 9008 can be crosslinked with isocyanate prepolymers. It may be used alone or in conjunction with other acrylics or polyesters.

Typical Properties:
Viscosity, Gardner-Holdt: X
Nonvolatiles, percent: 65
Pounds/Gallon:
Solution: 8.18
Solids, calculated: 9.27
Color, Gardner, maximum: 2
Solvent: MPK
Acid Value: 19
Hydroxyl Equivalent Weight, Solids: 650

Typical Film Properties (Formula 25-217):
Substrate: iron-phosphate treated CRS (Bonderite 1000)
Film Thickness: 1.5-2.0 mils
Bake Schedule: 15 minutes @ 300F
Film Hardness: 6H
60 Gloss: 85
20 Gloss: 65
Flexibility:
Direct, inch-pounds: 30
Reverse, inch-pounds: 4
QUV weatherometer 250 hrs.:
60 Gloss retention, percent: 100
20 Gloss retention, percent: 100
500 hrs.:
60 Gloss retention, percent: 98
20 Gloss retention, percent: 90
Appearance: good
Adhesion (crosshatch), percent loss: 0

HI-TEK POLYMERS, INC.: CMD 9012 Acrylic Resin:

CMD 9012 Acrylic Resin is a water reducible, high acid value, thermosetting acrylic resin supplied at 71 percent solids in 2-butoxyethanol. It can be made water soluble with an appropriate amine compound and can be crosslinked with selected amino resins for use in baking enamel formulations.

Performance Highlights:
- Excellent initial color and color retention
- Very good initial gloss and good gloss retention
- Hardness, toughness and mar resistance
- Resistance to common solvents and household stain
- Good cure at low baking temperatures
- Formulating versatility
- Conformance to most current air pollution restrictions

Suggested Uses:
CMD 9012 Acrylic Resin is suggested for dip or spray applied baking enamels for office equipment, metal office furniture, appliances, medicine cabinets, steel doors, steel shelving, and other metal fixtures and equipment.

Product Formulary:
- Dip Coating
- Spray Coating
- White Baking Enamel
- Low Cure Response Baking Enamel

Coatings based on CMD 9012 Acrylic Resin may be formulated for application by spray, dip or flowcoat. They may be applied directly to various substrates, including bare steel. No prime coat or metal pretreatment has been found necessary, but is, of course, desirable.

Typical Properties:
Viscosity at 25C: Z8
Nonvolatiles, percent: 71
Pounds/Gallon: 8.72
Color, Gardner, maximum: 1
Solvent: 2-butoxyethanol
Acid Value: 80
Tg, C: 11.4
Flashpoint, Setaflash, F: 148

Neutralization:
Water reducibility of CMD 9012 Acrylic Resin can be affected with any amine compound neutralizing agent desirable.
Amine compound selection should be based on usual considerations concerning color, required coating stability, intended application method, etc.

HI-TEK POLYMERS, INC.: CMD 9014 Acrylic Resin:

CMD 9014 Acrylic Resin is a hydroxyl functional resin supplied at 80 percent non-volatiles in n-butyl acetate. CMD 9014 Acrylic Resin is intended for two-component acrylic-urethane coatings that meet stringent VOC requirements. Acrylic-urethane enamels with VOC's of 2.8 lbs. per gallon are easily formulated at viscosities suitable for conventional spray application. CMD 9014 Acrylic Resin has a very low isocyanate demand, making it an economically attractive choice in formulating cost-effective high performance and high solids acrylic-urethane coatings.

Performance Highlights:
- High solids coatings that meet 2.8 VOC
- Low isocyanate demand
- Excellent gloss retention
- Cost effective formulations
- Superior adhesion and flexibility
- Long pot life
- Steep viscosity reduction curves
- Superior pigment wetting

Suggested End Uses:
- OEM product finishing
- Industrial maintenance
- Marine applications
- Business machines
- Aftermarket refinishing

Typical Properties:
Viscosity, Gardner-Holdt: Z4
Nonvolatiles, percent: 80.0
Pounds/Gallon:
Solution: 8.73
Solids, caculated: 9.19
Color, Gardner, maximum: 3
Solvent: n-butyl acetate
Hydroxyl Equivalent Weight, Solids: 800
Flashpoint, Setaflash, F: 94

Formulating:
Careful selection of raw materials is necessary. Ingredients which are added to either component of the system must be free of hydroxyl containing compounds such as alcohols, glycol ethers and water. Only urethane grade solvents should be used.

CMD 9014 has excellent solubility in a variety of solvents. Substantial viscosity reduction can be achieved by the addition of small amounts of solvent. It can also be used as a modifier for other acrylic resins to improve VOC. Coatings using CMD 9014 have been successfully applied using a pressure pot air spray gun. Pot pressures can range from 15 psig. to 25 psig. with nozzle pressure of 70 psig.

HI-TEK POLYMERS, INC.: CMD 9015 Acrylic Resin:

CMD 9015 acrylic resin is a high solids, hydroxyl functional resin designed for formulation of chemical resistant, thermosetting industrial coatings. This unique acrylic resin is supplied at 80% nonvolatile in methyl isobutyl ketone. It may be crosslinked with a variety of amino resins to produce coatings which can be applied at less than 2.8 lbs/gal VOC (volatile organic compounds). Such applications result in high gloss finishes free of sagging, cratering and substrate telegraphing.

Performance Highlights:
- Low VOC durable compliant coatings
- Long term package stability
- Exceptional chemical and solvent resistance
- Excellent balance of hardness, flexibility and weathering characteristics
- Good compatibility

Suggested End Uses:
- Aluminum extrusions
- Appliance finishes
- General industrial finishing

Typical Properties:
Viscosity, Gardner-Holdt: Z6
Non-Volatiles, percent: 80.0
Pounds/Gallon:
Solution: 8.85
Solids (calculated): 9.58
Color, Gardner: 2
Solvent: Methyl Isobutyl Ketone
Hydroxyl Equivalent Weight, solids: 400
Acid Value, solids: 20
Flashpoint, setaflash, F: 83F

For maximum solids at application, it is recommended that CMD 9015 acrylic resin be crosslinked with a high solids, monomeric melamine resin. The use of an unblocked para-toluene sulfonic acid catalyst is recommended. A level of 0.5% catalyst based on total resin solids is sufficient for most applications. Such coatings can be fully cured at temperatures as low as 250F with virtually no compromise in performance. Maximum stability with this system is achieved through incorporation of 20-30% n-butanol. The alcohol inhibits self-condensation of melamine resin. CMD 9015 is compatible with a variety of acrylic and polyester polyols. Should additional shelf stability be required as a result of modifications, a blocked catalyst such as SYNTEX 3981 should be employed.

CMD 9015 acrylic resin may also be cured with polymeric melamine resins.

HI-TEK POLYMERS, INC.: CMD 9017 Acrylic Modifying Resin (formerly RDX 77790):

CMD 9017 is a new answer to an old need which is finally finding a timely entry into the coating's market. This hydroxyl functional acrylic modifying resin is designed to help overcome various film surface imperfection formulating problems. A typical usage level is 1-5% based on total vehicle solids.

CMD 9017 has a unique low viscosity for a high molecular weight modifier. It may be used in high solids systems without adversely affecting VOC. Where it is used to optimize more than just surface properties, formulators may use it at levels as high as 40% of vehicle solids. It is noteworthy that CMD 9017 should not migrate in cured films since it does readily cross-link with amino resins and isocyanate prepolymers. It is expected to be compatible with most polyesters, acrylics, epoxies and general thermoset baking enamels.

Suggested End Uses:
- As anti-crater, surface tension modifier
- To improve leveling and reduce orange peel
- To improve adhesion
- To enhance recoatability
- As a pigment grinding vehicle

Typical Properties:
- Non volatiles, percent: 80.0
- Viscosity, Gardner-Holdt: V
- Color, Gardner (max.): 4
- Weight/Gallon:
  - Solution: 8.80
  - Nonvolatile: 9.05
- Solvent: Ethyl 3-ethoxy propionate
- Reduced Viscosity, Gardner-Holdt: B
- Hydroxyl Equivalent Weight: 580
- Flash Point, Setaflash F: 142

POLY-TEX 950 Monomer:

POLY-TEX 950 Monomer (hydroxypropyl methacrylate) can be used as a source of hydroxyl functionality in thermosetting polymers.

Suggested Uses:
- Include preparation of acrylic resins for:
  - Automotive topcoats
  - Coil coating
  - Appliance finishes
  - Metal decorating

Typical Properties:
- Viscosity, Gardner-Holdt: A4
- Assay, HPMA, percent: 86
- Acid Value: 34
- Inhibitor, MEHQ, ppm: 1,000
- Flash Point, Setaflash, F: 130
- Pounds/Gallon: 8.54
- Color (Max.): 1

ICI RESINS US: NEOCRYL Solid Acrylic Resins:

B-700:
BMA Polymer
Molecular Weight: Medium
Glass Transition Temperature (Tg): 48C
Tukon Hardness (KHN): 10
Ring and Ball Softening Point: 172C
Specific Gravity: 1.04
Viscosity (40% wt. Solids Toluene, 25C): 500 cps
Solubility: Mineral spirits, alcohols, esters, ketones, aromatics, chlorinated solvents

Broad solubility and compatibility. Hard tough films provide high gloss, heat resistance and durability. For use in coatings for wood, metals, and plastics. Excellent adhesion to untreated polypropylene with Eastman's Polyolefin 515-2 modification. It is easily and rapidly dissolved and ideal for solvent sensitive substrates. Due to its good compatibility with other binders, it is ideal for gravure printing inks. Also has compatibility with some fluorescent pigments. FDA 21 CFR compliance: 175.105, 176.180, 177.1010.

B-705:
BMA Copolymer
Molecular Weight: High
Glass Transition Temperature (Tg): 67C
Tukon Hardness (KHN): 12
Ring and Ball Softening Point: 160C
Specific Gravity: 1.04
Viscosity (40% wt. Solids Toluene, 25C): 900 cps
Solubility: Aromatics, esters, ketones, chlorinated solvents, mineral spirits.

Hard, durable, glossy films. Good compatibility with waxes and resins, excellent flow and leveling. Dry-bright solvent-based polishes for wood and parquet floors; clear coatings for plastics, paper and wood.

B-723:
BMA Copolymer
Molecular Weight: High
Glass Transition Temperature (Tg): 48C
Tukon Hardness (KHN): 8
Ring and Ball Softening Point: 194C
Specific Gravity: 1.10
Viscosity (40% wt. Solids Toluene, 25C): 3000 cps
Solubility: Esters, ketones, aromatics, chlorinated solvents.

Excellent adhesion to bare and treated metals. Excellent compatibility, heat resistance, and color retention. For use in clear and pigmented coatings on aluminum, steel, brass and chrome. It is easily and rapidly dissolved and forms tough impact resistant films with outstanding moisture resistance. FDA 21 CFR compliance: 175.105, 175.300, 176.180, 177.1010.

ICI RESINS US: NEOCRYL Solid Acrylic Resins(Continued):

B-723LV:
BMA Copolymer
Molecular Weight: High
Glass Transition Temperature (Tg): 48C
Tukon Hardness (KHN): 8
Ring and Ball Softening Point: 180C
Specific Gravity: 1.10
Viscosity (40% wt. solids Toluene, 25C): 2000 cps
Solubility: Esters, ketones, aromatics, chlorinated solvents, some alcohols.
Similar to B-723 in performance properties. Solutions of B-723LV have lower viscosities for better sprayability at higher application solids and pigment loading. Still rather viscous for pigmented spray.

B-725:
MMA/BMA Copolymer
Molecular Weight: Low/Medium
Glass Transition Temperature (Tg): 50C
Tukon Hardness (KHN): 12
Ring and Ball Softening Point: 160C
Specific Gravity: 1.11
Viscosity (40% wt. Solids Toluene, 25C): 350 cps
Solubility: Esters, ketones, aromatics, chlorinated solvents.
Fast dissolving with rapid solvent release. Broad compatibility and high solids at low application viscosity. For use in coatings for metal, wood and plastics. Also for use in traffic and marine paints, and graphic art applications. FDA 21 CFR compliance: 175.105, 175.300, 176.180, 177.1010.

B-728:
MMA Polymer
Molecular Weight: Medium
Glass Transition Temperature (Tg): 105C
Tukon Hardness (KHN): 21
Ring and Ball Softening Point: >200C
Specific Gravity: 1.19
Viscosity (40% wt. Solids Toluene, 25C): 7000 cps*
Solubility: Esters, ketones, chlorinated solvents, mixed
Hard and durable with excellent gasoline, oil, and plasticizer resistance. Also, excellent alcohol, heat and chemical resistance. For use in coatings for auto refinishing, vinyl, and plastics. Ideally suited for gravure and screen printing inks. FDA 21 CFR compliance: 176.105, 175.300, 176.170, 176.180, 177.1010.
* 40% wt solids in MEK, 25C.

ICI RESINS US: NEOCRYL Solid Acrylic Resins(Continued):

B-734:
BMA Copolymer
Molecular Weight: Medium
Glass Transition Temperature (Tg): 45C
Tukon Hardness (KHN): 12
Ring and Ball Softening Point: 163C
Specific Gravity: 1.10
Viscosity (40% wt. Solids Toluene, 25C): 500 cps
Solubility: Esters, ketones, aromatics, chlorinated solvents.
Compatible with many short and medium oil alkyds. Excellent pigment grinding vehicle. For use in clear and pigmented coatings for auto refinishing, plastics and for upgrading of alkyd paints.

B-735:
MMA/BMA Copolymer
Molecular Weight: Low/Medium
Glass Transition Temperature (Tg): 72C
Tukon Hardness (KHN): 16
Ring and Ball Softening Point: 1.15
Viscosity (40% wt. Solids Toluene, 25C): 300 cps
Solubility: Esters, ketones, aromatics, chlorinated solvents
Fast dissolving with rapid solvent release. Good chemical and gasoline resistance. Suggested for automotive plastics and auto refinishing.

B-736:
MMA Copolymer
Molecular Weight: Medium/High
Glass Transition Temperature (Tg): 95C
Specific Gravity: 1.18
Viscosity (40% wt. Solids Toluene, 25C): 800 cps*
Solubility: Esters, ketones, aromatics, chlorinated solvents.
Hard, tough films provide high gloss, mar resistance and gasoline resistance. Excellent exterior durability with resistance to cracking. For use in coatings for clear and pigmented auto refinish systems.
* 36% wt solids in 60/40 Toluene/MEK, 25C

ICI RESINS US: NEOCRYL Solid Acrylic Resins(Continued):

B-745:
MMA-BMA Copolymer
Molecular Weight: Low/Medium
Glass Transition Temperature (Tg): 53C
Tukon Hardness (KHN): 13
Ring and Ball Softening Point: 160C
Specific Gravity: 1.11
Viscosity (40% wt. Solids Toluene, 25C): 300 cps
Solubility: Esters, ketones, aromatics, chlorinated solvents
Excellent adhesion to bare and treated metals. High solids at low application viscosity. For use in clear and pigmented coatings on aluminum, steel, brass and chrome. Also, for transportation and tank coatings.

B-750:
BMA Copolymer
Molecular Weight: Medium
Glass Transition Temperature (Tg): 53C
Tukon Hardness (KHN): 12
Ring and Ball Softening Point: 160C
Specific Gravity: 1.11
Viscosity (40% wt. Solids Toluene, 25C): 450 cps
Solubility: Esters, ketones, aromatics, chlorinated solvents
A low odor polymer with high hardness, broad compatibility and alcohol tolerance. Ideally suited for flexographic and screen printing inks. FDA 21 CFR compliance: 175.105, 175.300, 176.180, 177.1010.

B-1000:
Acrylic Copolymer
Molecular Weight: Low/Medium
Glass Transition Temperature (Tg): 43C
Tukon Hardness (KHN): 12
Ring and Ball Softening Point: 110C
Specific Gravity: 1.05
Viscosity (40% wt. Solids Toluene, 25C): 350 cps
Solubility: Esters, ketones, aromatics, chlorinated solvents
Fast dissolving, compatible with nitrocellulose and other acrylic resins. For use in clear and pigmented coatings for wood, metal and plastics. Also, as an extender for nitrocellulose lacquers. FDA 21 CFR compliance: 175.105, 176.180.

ICI RESINS US: NEOCRYL Solid Acrylic Resins(Continued):

B-1019:
Type: MMA/BMA Copolymer
Molecular Weight: Low/Medium
Glass Transition Temperature (Tg): 50C
Tukon Hardness (KHN): 12
Ring and Ball Softening Point: 160C
Specific Gravity: 1.11
Viscosity (40% wt. Solids Toluene, 25C): 250 cps
Solubility: Esters, ketones, aromatics, chlorinated solvents.
Suggested for clear and metallic aerosols. Excellent durability and fast speed of dry. FDA 21 CFR compliance: 175.105, 175.300, 175.180, 177.1010.

B-1042:
BMA Copolymer
Molecular Weight: Medium
Glass Transition Temperature (Tg): 40C
Tukon Hardness (KHN): 6
Ring and Ball Softening Point: 160C
Specific Gravity: 1.08
Viscosity (40% wt. Solids Toluene, 25C): 1200 cps
Solubility: Esters, ketones, aromatics, chlorinated solvents, mixtures with mineral spirits.
A polymer with broad compatibility with other resins including solution PVC's, nitrocellulose, chlorinated rubber, waxes and hard resins. It is easily and readily dissolved and has good tolerance for aliphatics and lower alcohols. FDA 21 CFR compliance: 175.105, 175.300, 176.180, 177.1010.

ICI RESINS US: NEOCRYL Special Purpose Polymers:

S-1007:
Acrylic
Solids: 36%
Viscosity (25C): 850 cps
Weight/Gallon: 7.8 lbs.
Solvent System: Toluene/Methyl Ethyl Ketone
High gloss with excellent exterior durability, humidity, and gasoline resistance. For use in clear or pigmented coatings such as auto and farm equipment refinishing. Can be applied in thick films without crazing or cracking at low temperature.

LE-800:
Acrylic
Solids: 60%
Viscosity (25C): 8,000 cps
Weight/Gallon: 8.4 lbs.
Solvent System: 2-butoxy ethanol
Water reducible, low temperature cure thermoset. Can be crosslinked with water-borne methylated melamines and cured under 120C (250F) without external acid catalysts. Coatings have high gloss and hardness with excellent stain, chemical, corrosion and water resistance. For use in coatings for small appliances, lighting fixtures, metal shelving and general metal finishing.

S-1004:
Acrylic
Solids: 50%
Viscosity (25C): 4,000 cps
Weight/Gallon: 7.1 lbs.
Solvent System: Odorless mineral spirits
Aliphatic-soluble solution acrylic. Excellent pigment dispersant for hard-to-wet pigments such as carbon blacks in solvent or oil solutions. Suggested for liquid photocopy toners, inks and wood floor polishes.

S-200:
Acrylic
Solids: 64%
Viscosity (25C): 2,500 cps
Weight/Gallon: 8.4 lbs.
Solvent System: Xylene
High solids solution acrylic. Compatible with high solids alkyds. Improves dry time, exterior durability, water and humidity resistance.

S-201:
Acrylic
Solids: 64%
Viscosity (25C): 700 cps
Weight/Gallon: 8.2 lbs.
Solvent System: Toluene/Methyl Propyl Ketone
Same as S-200, but alternate solvent blend produces a lower viscosity solution.

MCWHORTER: Solution Acrylics:

ACRYLAMAC 5103:
Wt/Gal: 8.80
% NVM: 60
Solvents: Xylol/PM Acetate
Gardner Color: 4 Max
Acid # (Solids): 4 Max
Viscosity: Z2-Z4
F Seta Flash Point: 82
A solution acrylic with good flexibility for two-pack isocyanate cure systems. It exhibits very good gloss and color retention in a wide array of applications.

ACRYLAMAC 5107:
Wt/Gal: 8.25
% NVM: 55
Solvents: Xylol
Gardner Color: 1 Max
Acid # (Solids): 18 Max
Viscosity: X-Z
F Seta Flash Point: 80
A thermosetting acrylic resin mainly for dip or spray coatings. It has excellent cure response when modified with melamines, and offers excellent adhesion and flexibility.

ACRYLAMAC 5120:
Wt/Gal: 8.60
% NVM: 60
Solvents: EP/T/X/IP
Gardner Color: 1 Max
Acid # (Solids): 50-55
Viscosity: Z3-Z5
F Seta Flash Point: 40
A thermosetting acrylic with very high molecular weight, it has compatibility with a variety of crosslinkers. It cures as low as 180F, or with short, high temperature bakes, giving the formulator maximum latitude.

ACRYLAMAC 5139:
Wt/Gal: 8.82
% NVM: 80
Solvents: Xylol/OX/HX/ACT
Gardner Color: 1 Max
Acid # (Solids): 32-35
Viscosity: Z3-Z5
F Seta Flash Point: 85
A very high quality, high solids thermosetting acrylic. It develops excellent hardness and cures rapidly at moderate temperatures. It can be used to modify polyesters to improve flow and adhesion.

MCWHORTER: Solution Acrylics(Continued):

ACRYLAMAC 5168:
Wt/Gal: 8.15
% NVM: 50
Solvents: Toluol
Gardner Color: 1 Max
Acid # (Solids): 10 Max
Viscosity: Z3-Z5
F Seta Flash Point: 40
A fast drying thermoplastic acrylic which dries to a hard film with good exterior durability and adhesion. It can be used alone in clear or pigmented systems, or as a modifier to promote dry and hardness.

ACRYLAMAC 5182:
Wt/Gal: 8.40
% NVM: 50
Solvents: Toluol
Gardner Color: 1 Max
Acid # (Solids): 5 Max
Viscosity: Z2-Z4
F Seta Flash Point: 45
A thermoplastic acrylic resin which performs very well as a concrete sealer. Durability and adhesion are outstanding features of this fine resin, which also offers flexibility and water resistance.

ACRYLAMAC 5203:
Wt/Gal: 8.74
% NVM: 55
Solvents: EP/IP
Gardner Color: 1 Max
Acid # (Solids): 75-80
Viscosity: Z-Z2
F Seta Flash Point: 93
Has carboxyl functionality. It can be formulated to water soluble or solvent coatings of exceptionally high quality. A thermosetting polymer, it will crosslink with amines or epoxies or a combination of the two.

ACRYLAMAC 5297:
Wt/Gal: 8.80
% NVM: 70
Solvents: EP
Gardner Color: 2 Max
Acid # (Solids): 36-40
Viscosity: Z2-Z4
F Seta Flash Point: 128
A medium high solids acrylic which has hydroxyl functionality, enabling it to be used as a conventional solution acrylic or a water soluble resin. Its pigment wetting ability also promotes use as a grinding vehicle.

MCWHORTER: Solution Acrylics(Continued):

ACRYLAMAC 5405:
Wt/Gal: 8.07
% NVM: 40
Solvents: Toluol
Gardner Color: 1 Max
Acid # (Solids): 10 Max
Viscosity: W-Z
F Seta Flash Point: 40
A thermoplastic polymer which has compatibility with a wide variety of resins, including vinyls and nitrocellulose. It improves gloss, hardness, and mar resistance in vinyls and aids adhesion of lacquers.

ACRYLAMAC 7200:
Wt/Gal: 8.85
% NVM: 80
Solvents: Xylol
Gardner Color: 1-2
Acid # (Solids): 2-3
Viscosity: Z-Z2
F Seta Flash Point: 80
A high solids acrylic for two-pack polyisocyanates. It offers low viscosity, outstanding gloss retention and superior flexibility below 3.5 VOC.

ACRYLAMAC 7555:
Wt/Gal: 8.84
% NVM: 80
Solvents: EP
Gardner Color: 6 Max
Acid # (Solids): 95-100
Viscosity: Z3-Z5
F Seta Flash Point: 128
A high solids carboxyl functional acrylic for non-isocyanate two-package systems crosslinked with light stable epoxies. It formulates to 3.5 VOC with excellent gloss and color retention, flexibility and chemical resistance.

MOBAY CORP.: Acrylics:

DESMOPHEN A 160A:
Weight Solids Solvent: 60% Aromatic 100
Viscosity @ 25C, mPa.s: 1725-2550
Weight per gallon, lbs @ 20C: 8.3
Equivalent weight, average: 1058
OH Content %: 1.6
OH Number: 53
Weatherable architectural, marine, maintenance and new construction coatings.

DESMOPHEN A 365:
Weight Solids Solvent: 65% n-Butyl Acetate/Xylene (3:1)
Viscosity @ 25C, mPa.s: 2300-3500 (23C)
Weight per gallon, lbs @ 20C: 8.7
Equivalent weight, average: 607
OH Content %: 2.8
OH Number: 92
Light stable, weather-, solvent- and gasoline-resistant coatings for metal, concrete; especially suited for automotive refinish.

DESMOPHEN A 450A:
Weight Solids Solvent: 50% n-Butyl Acetate/Xylene (1:1)
Viscosity @ 25C, mPa.s: 3000-5000
Weight per gallon, lbs @ 20C: 8.3
Equivalent weight, average: 1700
OH Content %: 1.0
OH Number: 33
Hard, fast drying wood coatings; automotive refinish primer surfacer

MORTON INTERNATIONAL: Acrylic Resin UCD 3-85:
A Carboxyl-functional Thermosetting Acrylic

Acrylic Resin UCD 3-85 is a moderately hard modified acrylic backbone with pendent carboxyl groups that are particularly suited for crosslinking with epoxy resins. When properly crosslinked, these coatings are quite hard, yet tough and durable in terms of chemical and detergent resistance. Coatings formulated with UCD 3-85 are durable, but early chalking may occur when aromatic epoxy resins are used.

Typical Physical Characteristics:
Solids, by weight: 50\1%
Solvent:
Xylol: 80%
Isobutanol: 20%
Viscosity @ 25C: 5000-10,000 cps
Acid Value, Solids Basis: 75.0
Equivalent Weight, Solids Basis: 748
Weight per gallon at 25C: 8.07 pounds

Properties:
Acid functional acrylic polymers, formulated with medium equivalent weight epoxy resins, produce enamels of excellent package stability. Aminoplast resins may be used alone or in conjunction with epoxy resins and will tend to boost solvent resistance properties of cured films, although epoxy-acrylic systems are notable for this benefit in their own right.

UCD 3-85 formulations wet most surfaces well and adhere tightly to them. Because of their excellent adhesion, fully cured films offer an interesting and unique balance of hardness, toughness, and flexibility.

The solvent resistance of cured films is practically demonstrated by their very high level of chemical and detergent stain resistance. This property contributes greatly to the application of UCD 3-85 in finishes for metal decorating, appliances, metal office and laboratory furniture, and construction hardware.

Formulation Suggestions:
Enamels of UCD 3-85 are typically formulated in a 60/40 ratio with medium molecular weight epoxy resins. Reducing solvents may be selected from the wide variety of ketones, esters, and aromatic hydrocarbons that are fully compatible with this resin.

Baking Conditions:
A minimum baking temperature of 350F for 30 minutes is recommended for optimum adhesion and resistance properties off the line. Higher temperatures and shorter time cycles may be used, but film discoloration due to breakdown of the epoxy resin will be noticed at schedules exceeding 375F for extended times.

MORTON INTERNATIONAL: UCD 33 Acrylic Resin:

Compatibility with long and medium oil length alkyd resins is the most noteworthy property of UCD 33 acrylic resin. This resin is one a broad series of all acrylic resins of moderate film hardness. It will most frequently find use to improve the speed of drying, early film hardness and original color as well as color retention of alkyd coatings.

Properties:

UCD 33 films are water white and extremely resistant to water spotting or whitening. As should be expected of polymers soluble in mineral spirits, the resin film is sensitive to lifting on exposure to most solvents, like gasoline. In use, this feature is controlled somewhat by drying and crosslinking of the alkyd used with UCD 33 resin. The tolerance of UCD 33 resin and it affinity for olefinic materials allows use in petroleum wax floor and furniture finishes to impart gloss and hardness. The film hardness of UCD 33 films after force drying is HB.

Compatibility:

Resins:	Solvents:
Nitrocellulosic	Esters
Parlon	Chlorinated hydrocarbons
Silicones	Glycol ethers
Vinyl copolymers	All hydrocarbons
Alkyd, high and medium oil length	Higher alcohols

Typical Physical Characteristics:

- Appearance: Clear, colorless liquid
- Solids, % by weight: 45±1
- Solvent: Mineral spirits
- Viscosity, cps @ 25C: 800-1600
- Weight, Lbs/Gal @ 25C: 7.4±0.1

MORTON INTERNATIONAL: UCD 39 Resin:

UCD 39 resin was developed to supplement UCD 33 resin. Both are hard methacrylate resins offering broad compatibility with alkyd resins. UCD 39 resin is particularly applicable for use with short and medium oil length grades, where color and drying time are improved with little or no sacrifice in resistance to gasoline and fuel oils. The water white film clarity and color of UCD 39 carries over in such resin blends.

The relatively low molecular weight of UCD 39 resin, combined with good pigment wetting ability, may be advantageously used to disperse difficult grinding pigments, like carbon blacks, and in weak grinding vehicles like epoxies, vinyls and some adhesion promoted acrylic resins.

Properties:

UCD 39 resin solutions are clear, colorless and free flowing. Free films of this resin are hard, somewhat brittle and contribute little to adhesion. For these several reasons, UCD 39 resin would most frequently be formulated in blends with other film-forming resins.

Compatibility:

Resins:	Solvents:
Cellulose acetate butyrate	Aromatic hydrocarbons
RS nitrocelluose	Higher alcohols
Vinyl homopolymers	Esters
Vinyl copolymers	Ketones
Epoxies	Epoxidized oils
Parlon rubber	
Alkyds	
Acrylated alkyds	
Silicones	

Typical Physical Characteristics:

Appearance: Clear, water white solution
Solids, % by weight: 50 \ 2%
Solvent (red label): Toluene/Xylol: 30/70
Viscosity @ 25C: 2100 - 4200 cps
Weight/gallon @ 25C: 8.3

MORTON INTERNATIONAL: Acrylic Resin UCD77:

Acrylic Resin UCD77 is a hard, thermoplastic methacrylate polymer supplied as a solution in a solvent mixture of MEK and toluol.

Typical Physical Characteristics:
- Solids Content: 50±1%
- Solvent:
  - MEK: 70%
  - Toluol: 30%
- Viscosity @ 25C: 1000 cps to 2500 cps
- Weight per gallon @ 25C: 7.8±0.1 lbs
- Appearance: Colorless and clear

Properties:

Typical of the general class of methacrylate polymers, Acrylic Resin UCD77 produces colorless films with excellent resistance to yellowing when subjected to outdoor weathering or elevated temperatures.

Acrylic Resin UCD77 possesses uniquely rapid solvent release characteristics thereby suggesting its use in formulations with extremely fast air dry requirements.

Acrylic Resin UCD77, as indicated by its relatively low viscosity, is classed as a low molecular weight methacrylate polymer. Acrylic Resin UCD77 shows infinite dilution capability with most solvents with the exception of alcohols and aliphatic hydrocarbons. The tolerance for alcohols and aliphatic hydrocarbons in solution is quite high, however, considering the relative hardness of the methacrylate polymer.

The relatively low molecular weight and broad solubility of Acrylic Resin UCD77 are accompanied by a broad compatibility with most commercially available resins.

MORTON INTERNATIONAL: Acrylic Resin UCD78:

Acrylic Resin UCD78 is a hard, thermoplastic methacrylate polymer supplied as a solution in a solvent mixture of MEK and toluol.

Typical Physical Characteristics:
- Solids Content: 51+-1%
- Solvent:
  - MEK: 65%
  - Toluol: 35%
- Viscosity @ 25C: 1400 cps to 2800 cps
- Weight per gallon @ 25C: 8.0\0.1 lbs
- Appearance: Colorless and clear

Properties:

Typical of the general class of methacrylate polymers, Acrylic Resin UCD78 produces colorless films with excellent resistance to yellowing when subjected to outdoor weathering or elevated temperatures.

Acrylic Resin UCD78 possesses uniquely rapid solvent release characteristics thereby suggesting its use in formulations with extremely fast air dry requirements.

Acrylic Resin UCD78, as indicated by its relatively low viscosity, is classed as a low molecular weight methacrylate polymer. Acrylic Resin UCD78 shows infinite dilution capability with most solvents with the exception of alcohols and aliphatic hydrocarbons. The tolerance for alcohols and aliphatic hydrocarbons in solution is quite high, however, considering the relative hardness of the methacrylate polymer.

The relatively low molecular weight and broad solubility of Acrylic Resin UCD78 are accompanied by a broad compatibility with most commercially available resins.

MORTON INTERNATIONAL: Acrylic Resin UCD84:
A Unique Higher Solids Polyol with Reduced Crosslink Demand

Acrylic Resin UCD84 is a moderately hard, but flexible, acrylic backbone that should be crosslinked with aliphatic or aromatic urethanes, melamines, or ureas. In appropriate formulations, this resin contributes outstanding gloss, durability to weathering, resistance to harsh environmental factors, and attractive economics.

Typical Physical Characteristics:
- Solids, by Weight: 65-67%
- Solvent:
  - Ethyl Benzene: 23%
  - MEK: 10%
- Viscosity @ 25C: 2300-4600 cps
- Hydroxyl Equivalent Value: 1200
- Acid Number: Nil
- Weight per Gallon at 25C: 8.55
- Color: Clear, off white

Properties:

High equivalent value and relatively low viscosity are unique benefits of UCD84 that will be of great interest to the formulator of urethane and/or melamine crosslinked finishes, since these features permit an interesting economic variation in the normal acrylic polyol chemistries in popular use. The resulting lower crosslink density nevertheless does not sacrifice desirable resistance properties. Cured films have good tolerance toward caustic cleaners and most solvent containing cleaners or fuels.

The solvent tolerance of UCD84 is typical of the acrylic polyols. Aromatic hydrocarbons, ethers, esters, and ketones are commonly used. Aliphatic hydrocarbons and naphthas generally should be avoided.

Compatibility with other film forming resins has not been extensively evaluated as Morton does not expect such formulations to be of much interest. Morton anticipates that blends with epoxy, polyamides, vinyls, and some polyesters would be possible. Formulations including the reactive diluants may provide the formulator the ability to reach VOC compliant levels.

A companion line of popular pigments ground in a reactive millbase system is provided by UCD in their latest trade offering, the UCD "AU" line. These dispersions were chosen for excellent durability and complete color acceptance for tints and masstones. Film properties are not compromised as it is sometimes experienced through use of some dispersion systems.

MORTON INTERNATIONAL: Acrylic Resin UCD88:

Acrylic Resin UCD88 is a hard, thermoplastic methacrylate polymer supplied as a solution in toluol.

Typical Physical Characteristics:
- Solids Content: 50%+-1%
- Solvent:
  - Toluol: 100%
- Viscosity @ 25C: 2000 cps to 5000 cps
- Weight per gallon @ 25C: 8.2+-0.1 lbs
- Appearance: Colorless and clear
- Acid #: 0-2

Properties:

Typical of the general class of methacrylate polymers, Acrylic Resin UCD88 produces colorless films with excellent resistance to yellowing when subjected to outdoor weathering or elevated temperatures.

Acrylic Resin UCD88 possesses uniquely rapid solvent release characteristics thereby suggesting its use in formulations with extremely fast air dry requirements.

Acrylic Resin UCD88, as indicated by its relatively low viscosity, is classed as a low molecular weight methacrylate polymer. Acrylic Resin UCD88 shows infinite dilution capability with most solvents with the exception of alcohols and aliphatic hydrocarbons. The tolerance for alcohols and aliphatic hydrocarbons in solution is quite high, however, considering the relative hardness of the methacrylate polymer.

The relatively low molecular weight and broad solubility of Acrylic Resin UCD88 are accompanied by a broad compatibility with most commercially available resins.

MORTON INTERNATIONAL: UCD 89 Acrylic Resin:

UCD 89 acrylic resin is a copolymer of ethyl methacrylate with sufficient acrylate ester to produce hard yet flexible air-dry or baked lacquers. This resin frequently will be selected for use in aerosol or spray finishes containing luminescent or fluorescent pigments due to the polymer's low reactivity with the sensitive pigments. UCD 89 will also be used in combination with other lacquer resins, including vinyls, cellulosics, CAB and chlorinated rubber.

Properties:

The significant advantages of UCD 89, when compared to UCD 88 or UCD 99, are the unusual balance in hardness and extensibilty of unmodified films. Other acrylics of similar hardness require external plasticizers to achieve similar film performance. UCD 89 acrylic resin films are clear and water white, and will remain so on exposure.

Compatibility:

Resins:	Solvents:
Vinyls	Aromatic hydrocarbons
Vinyl copolymers	Esters
Cellulose aceto butyrate	Ketones
Silicone	Chlorinated solvents
Epoxy resins	Alcohols

Typical Physical Characteristics:

Appearance: Clear, colorless
Solids, % by weight: 50.0+-2.0
Solvent: Toluene
Viscosity, cps @ 25C: 3600-6500
Weight, lbs./gal. @ 25C: 8.0

MORTON INTERNATIONAL: UCD 90 Acrylic Resin:

UCD 90 acrylic resin has been designed to provide a performance capability between that of UCD 88 and UCD 89 acrylic resins. Lacquers formulated with this multi-purpose resin are hard, yet flexible when compared to UCD 88 acrylic resin. This polymer should be considered when a small compromise in durability can be permitted, since its acrylate component reduces durability in contrast to the methacrylate grades, such as UCD 88, UCD 89 and UCD 100. Coatings based on UCD 90 acrylic resin are equal or superior in durability, for example, to formulations containing nitrocellulose or vinyls.

Properties:
Solutions made from UCD 90 acrylic resins are clear and colorless, and lacquers prepared from this grade are hard, color-retentive and relatively gloss persistent on exterior exposure. The "print resistance" of UCD 90 acrylic resin films is marginal without modification with harder polymers, like vinyls, |-second nitrocellulose or CAB. A slip aid, such as UCD 2106N, will also benefit mar and block resistance.

Compatibility:

Resins:	Solvents:
Phthalate esters	Diacetone alcohol
Adipate polyesters	Chlorinated hydrocarbons
Acetate-vinyl copolymers	Ethers
R/S nitrocellulose	Glycol ethers, esters
Epoxy esters	Aromatic hydrocarbons, Ketones

Typical Physical Characteristics:
Appearance: Clear, water white solution
Solids, % by weight: 50+-2.0%
Solvent: Toluene, (Red Label)
Viscosity, @ 25C: 4000-7000 cps
Weight per gallon @ 25C: 8.3 lbs.

MORTON INTERNATIONAL: UCD 100 Acrylic Resin:

UCD 100 acrylic resin is the hardest member in the series of UCD thermoplastic acrylic resins. Most frequently this polymer is blended with other thermoplastic polymers where it contributes fast solvent release, early hardness and resistance to most solvents and many plasticizers. This last property explains why UCD 100 resin frequently is used as a major component of top coatings for vinyl coated upholstery films.

Properties:

Dry films of UCD 100 acrylic resin are clear and water white. When free of solvent or external plasticizer, the films are extremely hard, 8H on the "pencil" scale, or greater than 30 in Tukon hardness. Unless externally plasticized or blended with softer resins, UCD 100 films are brittle and show poor flexibility and adhesion to bare metal. Due to the excellent solvent resistance, the UCD 100 film resists most food or oil-based stains.

Compatibility:

Resins:	Solvents:
Vinyl homopolymer	Esters
Vinyl copolymer	Ethers
Epoxy resins	Ketones
Silicones	Aromatic hydrocarbons
Most methacrylate copolymers	Chlorinated solvents
Cellulose aceto butyrate	

Typical Physical Characteristics:

- Appearance: Clear colorless
- Solids, % by weight: 40.0+-1.0
- Solvent: MEK
- Viscosity, cps @ 25C: 700-1400
- Weight, Lbs/Gal @ 25C: 7.9+-0.1

MORTON INTERNATIONAL: UCD214HS Resin:

UCD214HS resin was specifically designed to ease the process of formulating high performance acrylic urethane finishes at reduced volatile organic content (VOC). A two component white enamel suitable for conventional spray application was formulated with a VOC of 2.75 lbs/gal. Reactive diluents may be employed to reduce volatility further, if necessary, to meet the accelerating stringency of regulatory requirements.

Coatings based on UCD214HS resin sacrifice little of the performance features associated with aliphatic isocyanate crosslinked acrylic backbones. They still provide high gloss and retention of gloss on exterior exposure, acid and alkali resistannce, water white color for clean, bright finishes and spot resistance to oil-based stains.

Properties:

UCD214HS resin provides performance features similar in all-important film qualities to the popular acrylic mainstay, UCD685. These include low isocyanate demand, reasonable pot life, good adhesion and flexibility, and durability upon exposure to the environmental factors experienced by high performance maintenance coatings.

The key differentiating feature of UCD214HS resin is its steep viscosity reduction curve. This allows the formulation of high build, opaque gloss finishes with reduced volatile solvent content. Another differentiating feature is the use of MAK as the sole solvent. This makes UCD214HS compliant with DOT flash-point restrictons.

Typical Physical Characteristics:

Solids by weight: 80%
Solvent: Methyl-amyl ketone
Viscosity, @ 25C: 5000-8500 cps
Weight, lbs/gallon @ 25C: 8.5
Hydroxyl equivalent weight: 800, solids basis
Hydroxyl number: 70, solids basis
Percent hydroxyl: 2.12
Flash point, F, Tag C.C.: 100 (DOT compliant)

Chemistry:

UCD214HS resin will most frequently be formulated with an aliphatic isocyanate, such as Mobay's Des N-75. Following is a description of the procedure that may be used to calculate the appropriate quantity of crosslinking components.

$$\text{Percent hydroxyl} = \frac{\text{hydroxyl No.}}{33} = 2.12$$

$$\text{Weight Des N-75} = \frac{247 \times \% \text{ hydroxyl}}{16.5} = 31.7/\text{binder solids}$$

Normal practice is to include 10% excess isocyanate to assure complete crosslinking of the polyol. In this case, 34.9 pounds of Des-N should be used with each 100 pounds of UCD214HS.

MORTON INTERNATIONAL: Acrylic Resin UCD685:

An acrylic resin for durable, glossy isocyanate or melamine cured finishes

Acrylic Resin UCD685 is an acrylic backbone of intermediate hardness that was designed specifically for formulation with isocyanate into tough, durable and glossy coatings. Where desired, alternate crosslinkers such as melamine or urea may be used with the expected compromise in exterior performance.

Typical Physical Characteristics:
- Solids, by weight: 60%
- Solvent:
  - PM Acetate: 55%
  - Ethyl Benzene: 25%
  - Mineral Spirits: 20%
- Viscosity at 25C: 3500-7000 cps
- Weight per Gallon at 25C: 8.6+-0.1 lbs.
- Hydroxyl Equivalent Value: 600

Properties:

The high equivalent value of UCD685 is a benefit that may be used to advantage whem combinations with flexible polyester or polyether resins are being considered. Generally, this resin will be used alone in aliphatic isocyanate cured finishes to achieve a versatile balance of adhesion, gloss and resistance to change on exposure.

The solvent tolerance of this resin system has not been extensively evaluated, but Morton expects isocyanate containing two compoment coatings will exhibit excellent tolerance for aromatic hydrocarbons, ketones and esters usually included in popular automotive and maintenance applications for the urethane coatings.

Note: UCD AU line dispersions should receive preferential consideration as a tinting system in view of their proven complementary reactive acrylic nature.

MORTON INTERNATIONAL: UCD 685HS Resin:

UCD 685HS Resin was specifically designed to ease the process of formulating high performnce acrylic urethane finishes at reduced volatile organic content (VOC). A two component white enamel suitable for conventional spray application was formulated with a VOC of 2.75 lbs/gal. Reactive diluents may be employed to reduce volatility further, if necessary, to meet the accelerating stringency of regulatory requirements.

Coatings based on UCD 685HS resin sacrifice little of the performance features associated with aliphatic isocyanate crosslinked acrylic backbones. They still provide high gloss and retention of gloss on exterior exposure, acid and alkali resistance, water white color for clean, bright finishes and spot resistance to oil-based stains.

Properties:

UCD 685HS resin provides performance features similar in all-important film qualities to the popular acrylic mainstay, UCD 685. These include low isocyanate demand, reasonable pot life, good adhesion and flexibility and durability upon exposure to the environmental factors experienced by high performance maintenance coatings.

The key differentiating feature of UCD 685HS resin is its steep viscosity reduction curve. This allows the formulation of high build, opaque gloss finishes with reduced volatile solvent content.

Typical Physical Characteristics:

Solids by weight: 80%
Solvent: n-butyl acetate
Viscosity, @ 25C: 5000-8500 cps
Weight, lbs/gallon @ 25C: 8.6
Hydroxyl equivalent weight: 800, solids basis
Hydroxyl number: 70, solids basis
Percent hydroxyl: 2.12
Flash point, F, Tag C.C.: 76 (Red Label)

Chemistry:

UCD 685HS resin will most frequently be formulated with an aliphatic isocyanate, such as Mobay's Des N-75. Following is a description of the procedure that may be used to calculate the appropriate quantity of crosslinking components:

$$\text{Percent hydroxyl} = \frac{\text{hydroxyl No.}}{33} = 2.12$$

$$\text{Weight Des N-75} = \frac{247 \times \text{\% hydroxyl}}{16.5} = 31.7/\text{binder solids}$$

Normal practice is to include 10% excess isocyanate to assure complete crosslinking of the polyol. In this case, 34.9 pounds of Des-N should be used with each 100 pounds of UCD 685HS.

MORTON INTERNATIONAL: Acrylic Resin UCD887:

An acrylic resin for durable, glossy isocyanate or melamine cured finishes

Acrylic Resin UCD887 is an acrylic styrene backbone of intermadiate hardness that was designed specifically for formulation with isocyanate into tough, durable and glossy coatings. Where desired, alternate crosslinkers such as melamine or urea may be used with the expected compromise in exterior performance.

Typical Physical Characteristics:
- Solids, by weight: 60%
- Solvent:
  - PM Acetate: 65%
  - Toluol: 35%
- Viscosity at 25C: 3500-7000 cps
- Weight per Gallon at 25C: 8.7+-0.1 lbs.
- Hydroxyl Equivalent Value: 1000
- Hydroxyl Equivalent Value, solids: 600

Properties:

The high equivalent value of UCD887 is a benefit that may be used to advantage when combinations with flexible polyester or polyether resins are being considered. Generally, this resin will be used alone in aliphatic isocyanate cured finishes to achieve a versatile balance of adhesion, gloss and resistance to change on exposure.

The solvent tolerance of this resin system has not been extensively evaluated, but Morton expects isocyanate containing two component coatings will exhibit excellent tolerance for aromatic hydrocarbons, ketones and esters usually included in popular automotive and maintenance applications for the urethane coatings.

Note: UCD HS line dispersions should receive preferential consideration as a tinting system in view of their proven complementary reactive acrylic nature.

NL CHEMICALS, INC.: Acrylic Polymers:

AROLON 557:
Type: Solution Acrylic
Percent Solids Weight: 70
Percent Solids Volume: 61.3
Solvent: B2
Solvent Percentages: 100
Viscosity - Stokes: 240-310
Viscosity - G-H: Z6+
Gardner Color, Max.: 2
Acid Value (NV): 65-75
Lbs./Gal., Solution: 8.30
Lbs./Gal., Solids: 9.60
Flash Point: 73-99
Description: Hard, Good Exterior Durability
Typical Uses: Baking Enamels; Excellent Pigment Dispersion Vehicle for Acrylic Emulsions

AROLON 559:
Type: Solution Acrylic
Percent Solids Weight: 70
Percent Solids Volume: 66.0
Solvent: G4
Solvent Percentages: 100
Viscosity - Stokes: 98-148
Viscosity - G-H: Z5-Z6
Gardner Color, Max.: 5
Acid Value (NV): 60-70
Lbs./Gal., Solution: 8.70
Lbs./Gal., Solids: 9.26
Flash Point: 140-199
Description: Hard, Faster Viscosity Reduction
Typical Uses: Baking Enamels; Excellent Pigment Dispersion Vehicle for Acrylic Emulsions

AROLON 820:
Type: Emulsion
Percent Solids Weight: 49.0
Percent Solids Volume: 46.4
Solvent: W
Solvent Percentages: 100
Viscosity - Stokes: 150-400 cps
Gardner Color, Max.: Milky
Lbs./Gal., Solution: 8.80
Lbs./Gal., Solids: 9.30
Flash Point: None
Description: Soft, Corrosion Resistant, Stable with Reactive Pigments
Typical Uses: Maintenance Primers and Topcoats

Solvent Legend: B2: sec-Butanol
G4: Butoxy Ethanol
W: Water